UC-NRLF
$C 32 133

RARY
THE
ERSITY
OF
FORNIA

IOE LIBB.

Digitized by the Internet Archive
in 2008 with funding from
Microsoft Corporation

http://www.archive.org/details/opportunitiesfor00pattrich

OPPORTUNITIES FOR VOCATIONAL EDUCATION
IN CALIFORNIA EVENING HIGH SCHOOLS

BY

Willard Walter
W. W. Patty ,

A.B.(Iowa State Teachers College)1914.

THESIS

Submitted in partial satisfaction of
the requirements for the degree of
MASTER OF ARTS
in
EDUCATION
in the
GRADUATE DIVISION
of the
UNIVERSITY OF CALIFORNIA.

1920

EDUCATION LIBR.

LB
P32
Educ
Lib.

Acknowledgments

The writer acknowledges the valuable suggestions and encouragement of Professor Robert J. Leonard, under whose supervision this study has proceeded.

An appreciation of the valuable information and splendid courtesies received from many individuals in the California Public School system and the California occupational field is also gratefully expressed.

W.W.P.

M819600

CONTENTS

I. Introduction Page

History of Growth of Evening Schools. 1-4

II. The Study 5-14

A. The Field of Study. 5-6

B. The Sources of Material 6-7

C. The Methods of Study. 7-14

III. Present California Evening High Schools 15-41

A. Those Whom They Serve 15-23

B. Relative Demand for Courses Offered 24-33

C. Manner in Which Some Schools Meet the Vocational Need in Certain Lines of Work 34-40

IV. The California Occupational Field 41-66

A. Industry. 41-58

B. Agriculture, Forestry and Fishing 59-60

C. Professional Service. 60-61

D. Trade and Transportation. 61-64

E. Domestic and Personal Service 64-65

F. Public Service. 65-66

G. Mining. 66

Page

V. Future California Evening High Schools. 67-80
  A. The Need for Vocational Work. 67-69
  B. Opportunities for Vocational Industrial Education. 69-75
    1. Suggestive Courses
    2. Essential Equipment
    3. The Instructor
  C. Opportunities for Vocational Agricultural Education. 75-76
    1. Suggestive Courses
    2. Essential Equipment
    3. The Instructor
  D. Opportunities for Vocational Home Making Instruction. 76-79
    1. Suggestive Courses
    2. Essential Equipment
    3. The Instructor
  E. Opportunities for Vocational Commercial Courses. 79-80
    1. Suggestive Courses
    2. Essential Equipment
    3. The Instructor

Page

VI. The Problem Applied to a Specific Community . . . 81-121
  A. The City of Richmond, California 81-103
    1. Its Location 82-83
    2. Brief History of its Origin and Growth 83-85
    3. Reasons for Growth 85-92
    4. Present State of Development 92-97
    5. The People 97-100
    6. The City's Probable Future 100-103
  B. Educational Facilities of Richmond. 103-107
    1. The Public School System 103-106
    2. Other Educational Facilities 106-107
  C. The Educational Needs of Richmond 107-115
    1. Based upon Interviews with Representative Citizens. 107-113
    2. Based upon Richmond's Occupational and Civic Interests. 113-114
    3. Based upon State Occupational Opportunities 114-116
  D. Opportunities for Vocational Instruction in the Evening High School 116-121
    1. Present Available Equipment. 116

Page

2. Suggestive Courses Which Might be Offered 117-119

3. Conclusion 119-122

VII. Bibliography. 122-124

I. INTRODUCTION

Brief History of Growth of Evening Schools

Although the importance of the evening school work has not been generally recognized until recent years, yet the history of the movement in this country dates back to the year 1834. The city of Louisville, Kentucky, claims the honor of inaugurating the movement in the United States, establishing the first evening school in 1834. Baltimore followed with six evening schools in 1840. New York City established evening schools for males in 1847 and for females in 1848; and Brooklyn's first evening schools date from 1850.

The first public evening high school was opened by Cincinnati in 1856. New York followed in 1866, St. Louis and Chicago in 1868, Philadelphia in 1869 and Boston in 1870. By 1870 there were sixty public evening high schools in the United States.

Chart No. I.

Growth of Evening Schools

Year	No. of cities maintaining schools
1881	32
1900	165
1909	233
1916	458

The total attendance for 1916 was 647,861. Since a large percentage of those attending are between the ages of 14 and 20 years, and since there are approximately 10,000,000 young people of these ages in the United States according to Dr. Cubberly, it is evident that we have only made a beginning in the field of providing education for the large percentage of young people who have heretofore dropped out of the public school system by the time they have reached the usual age of compulsory full-time attendance, fourteen years. It is true, to be exact, that one must subtract from the 10,000,000 the comparatively small percentage that continue in the public schools after that age. This comparatively small number is overshadowed, however, by the large and constantly increasing number of adults that are enrolling in the evening schools.

The rapid growth of evening schools and corresponding increase in enrollment is indicated by statistics from the Third Biennial Report of the California State Board of Education.

Chart No. II.

Year	Number of Schools	Enrollment
1914-15	9	16,223
1915-16	24	28,420
1916-17	28	38,567
1917-18	32	45,624
	Special classes..	7,929
	Total for 1917-18	(53,553)

The need for the type of work offered by the evening school is apparent from the figures on attendance that has been purely voluntary. While the evening school draws somewhat from all classes of people, it functions primarily for the benefit of the laboring class whose occupations during the day prohibit their utilizing the ordinary opportunities for an education. In 1898 the importance of this work was recognized by Thomas Davidson in an address before the Educational Alliance of New York, when he said:

> "How can people who have to spend all their time and energy in earning a bare livelihood find time or energy to become students? And yet that is the only condition on which the ideal of our Nation can ever become a reality. If the teachers of the Nation --- would form themselves into an association for the higher education of the bread-winners a couple of evenings a week, they would soon elevate the culture of the whole people, and remove the worst dangers that threaten society."

The evening school has been developing for a period of eighty five years until it has now assumed a place of recognized importance in our educational system. The attendance upon sessions of the evening schools is rapidly increasing. The immediate problems before thinking educators today is the question as to what will be the most valuable education to give to the evening school students. The students vary in nationality, sex, age, ability, and

quality and amount of previous education. It is with a view to ascertaining something of the relative demand for various courses that this study was originally instituted.

The findings of the study soon indicated clearly the increasing demand for vocational courses in the evening schools. For the purposes of this study the term "Vocational Education" will refer to specific training for financially profitable employment. The unusual demands of the recent war demonstrated the need for definite, short, intensive courses of training for specific purposes. This study is a consideration of the opportunities for this type of training work in the evening high schools of California.

II. The Study

A. The Field of Study

As the subject of the study would indicate, it was intended primarily to be confined to the work that representative California high schools are doing in vocational courses; and the opportunities and demand for that type of instruction in the evening high schools of the State. As a background, we have suggested something of the history of the growth of evening schools. No attempt has been made to deal with the history of development in a comprehensive way.

In order to ascertain definitely the types of individuals who take advantage of evening school opportunities for education, a study was made of the individual class enrollments of a typical California evening high school covering a two-year period. The results of this study are summarized in Section III -A, showing occupational, age, and sex distribution of a typical school. A careful study was made of the courses of study of thirty three California evening high schools and the class enrollments of twenty three of these schools to ascertain the relative demand for and popularity of various courses now offered. The results of this study

are briefly summarized in Section III-B. Section III-C mentions a few of many impressions received as to the type and quality of vocational work observed in various high schools of the State. The classes mentioned were some of those that impressed the author as being most practical and successful.

An attempt to ascertain the occupational opportunities of the State was only partially successful. The most recent source of authentic material is the 1918 report of the Bureau of Labor Statistics and the 1910 Federal Census. It would be desirable if more recent data were available. The findings in Section V relative to possible courses, essential equipment, and the best type of instructor is the result of conferences with administrators and instructors in evening schools of thirty one California high schools.

It seemed desirable to make a personal study of the civic and occupational interests of a specific community, with a view to estimating something of its educational needs, in order to determine the opportunities for vocational work in the evening schools. The results of this study comprise Section VI.

B. The Sources of Material

Only facts relative to the history of the development

of evening schools were secured from reference books in the library. Much of the information is derived from the courses of study and individual class enrollments of California evening high schools. Personal letters furnished a portion of the facts. Some of the information as to vocational work in Agriculture was derived from an earlier study of vocational work in Agriculture as carried on in twenty three of the states. The larger portion of the information has been secured by personal visits and interviews.

C. The Methods of Study

As suggested above, library reading was a very minor method employed. Five sets of personal letters were sent out to principals of California evening high schools, instructors of vocational subjects, and representative citizens in securing information for the findings of this study. Sixty four visits were paid to thirty one evening and vocational high schools while in session. Approximately fifteen days were spent in the field work in connection with the Richmond study. A list of representative citizens engaged in the major occupations of the community was carefully made. This list included names recommended by educators, public officials, and labor leaders. Sixteen different

occupations were represented by the twenty one individuals interviewed by the author. In some instances these interviews were secured by a preliminary interview. In almost all cases a personal letter, preliminary to the visit, was sent. In some cases appointments were arranged by telephone. A number of shops and factories were visited while engaged in the study.

It is certainly due the citizens of Richmond, and principals and instructors in the California evening and vocational high schools to here express an appreciation of the splendid courtesy and co-operation accorded during the study. The granting of requests for personal interviews, courses of study, individual class enrollments, and essential equipment necessarily required considerable inconvenience on their part; and it is because of their courtesies combined with personal visits that we are enabled to include in our study up-to-date statistics on the present evening high school situation.

In the personal interviews and visits to evening schools while in session, the finest courtesy was uniformly shown. In all cases every effort was made to furnish the desired information, classes were visited under the guidance of the principals; and both principals and instructors cheerfully and enthusiastically explained the nature of the

work, good results, difficulties, and plans for the future. Throughout the evening schools visited there runs a spirit of earnestness, enthusiasm, and co-operation.

Copies of letters used in the correspondence method appear on pages immediately succeeding.

2427 Durant Avenue,
Berkeley, California,
September 27, 1919.

Principal, Evening High School,

Dear Sir:-

I am making a special study of the types of work done in the Evening Schools of California. It would be an assistance which I would much appreciate, if you could find it convenient to mail to me (using stamped wrapper enclosed) a copy of your Evening Course of Study.

Any additional information or suggestions will be very welcome. I thank you for your courtesy.

Very truly yours,

W. W. Patty

2427 Durant Avenue,
Berkeley, California,
November 10, 1919.

Mr. A. S. Straub,
Certainteed Products Corporation,
Richmond, California.

Dear Sir:-

Your name has been suggested as being especially interested in the welfare of Richmond and its schools.

You undoubtedly know that a special school census of all minors is now being taken under the direction of the State Superintendent of Public Instruction. The facts thus obtained are for use in connection with the inauguration of the new Part-Time School Attendance Law which requires all children under 18 years of age, who are not already in regular school attendance, to attend a public school for at least four hours per week. This law becomes effective next school year.

Mr. W. F. Martin and I (of the University of California) are making a special study of the operation of this act; and hope to be of practical assistance to the Richmond Board of Education in securing the necessary information for starting its operation in your community.

We hope to see you personally within the next few days, and place the matter before you with a view of gaining your co-operation as a member of an advisory council.

We thank you for your courtesy.

Very truly yours,

W. W. Patty

2427 Durant Avenue,
Berkeley, California,
November 11, 1919

Principal, Evening School,
Mr. J. C. Greenup,
Long Beach, California.

Dear Sir:-

Your courtesy in forwarding an outline of your Evening School Course of Study is much appreciated.

We are going to ask yet another favor of you. We have reached a point in our study of evening school courses of study where it seems very desirable to ascertain the relative demand for and popularity of the various subjects offered.

If you find it possible, will you please send us the number enrolled in each of the classes under your present course of study?

We thank you for your courtesies.

Very truly yours,

W. W. Patty

2427 Durant Avenue,
Berkeley, California,
February 4, 1920.

Mrs. Sadie C. Atherton,
Principal, Labor Temple Evening High School,
5th & Maple Sts.,
Los Angeles, California.

Dear Madam:-

I was much interested in my recent visit to your evening high school in the unique type of work that you are doing there. Your work was of special interest to me as I am making a special study of the opportunities for vocational education in the evening high schools of California.

One of the phases of my investigation is an attempt to ascertain something of the relative public demand for various courses offered. This part of the study is based upon the assumption that the need for a specific course is usually indicated by the enrollment in that class.

I will appreciate very much your inconvenience if you will furnish me with your evening school enrollment in the various classes. As I hope to complete this study soon, a prompt reply will be much appreciated.

I thank you for your courtesies.

Sincerely,

W. W. Patty

2427 Durant Avenue,
Berkeley, California,
February 4, 1920.

Mr. R. M. Westover,
487 Magnolia Avenue,
San Bernardino, California.

Dear Mr. Westover:-

I am much interested in your educational situation in San Bernardino, especially your evening school work. I am making a special study this year of the opportunities for vocational education in California Evening High Schools.

As I know that you have had an unusual amount of experience in connection with the commercial work of the evening school, I am writing to you requesting information which your experience will make valuable. I will appreciate very much your inconvenience in answering the following questions.

1. What is the enrollment in each of your evening classes?

2. What courses do you believe to be essential to meet the need for vocational classes in commercial education in a typical California Evening High School?

3. Please indicate a minimum list of equipment essential to the proper conduct of vocational classes in commercial work offering such courses. (Classes of twenty students)

As I hope to complete my thesis soon, a prompt reply would be much appreciated.

I thank you for your courtesies.

Very truly yours,

W. W. Patty

III. Present California Evening Schools

A. Those Whom They Serve

The students in the evening schools might be divided into four groups according to the motive prompting their enrollment:

1. The comparatively small number desiring to prepare for entrance to university or technical school.
2. The largest proportion, those enrolled in continuation or trade preparatory courses, the object being to improve themselves in their vocation; or to prepare for a better position in another field.
3. A rapidly increasing number of those enrolled in the evening schools in courses leading to general or cultural improvement.
4. The very important group of Americans in the making, a work that has received an added impetus since the entry of the United States in the recent war. The group in the average school is not a large percentage of the total enrollment; but the significance of the demand for this work

causes it to be rated as of great importance.

While it is true that the larger proportion of the evening school students are adults, we find, in examining the 1917-18 Report of the California Commissioner of Vocational Education, that a very considerable number of children of school age are in attendance in the special day and evening schools.

Chart No. III.

1917 Enrollment in Special Day and Evening Schools 1918

First Year		
Boys	3,948	
Girls		7,545
Second Year		
Boys	152	
Girls		150
Third Year		
Boys	57	
Girls		67
Fourth Year		
Boys	34	
Girls		260
Total Boys	4,191	
Total Girls		8,022
Total children	12,213	
Total adults and children		53,553

Chart No. III. shows that approximately 25% of the

students enrolled in the California Evening High Schools are of school age.

The special studies as to whom the evening schools benefit include charts indicating sex, ages, and vocations. These charts have been worked out from records secured from the Oakland Technical High School covering enrollments for the past two years. Chart No. IV. shows for each course: the total enrollment at the time, total males, total females, and number of persons falling within eight age groups. Chart No. V. gives total for the eight age groups. Chart No. VI. shows the relative proportion of the sexes in the evening school. These statistics were secured during the street car and ship yard strikes in Oakland when the attendance was temporarily low. The total enrollment for the Oakland Technical Evening High School for the term as a whole was 4,211. Tables IV, V, and VI are derived from the 1919-20 enrollments.

Chart No. VII. shows the actual distribution of students as to daily vocation, giving an idea of the classes of people that are served by the evening schools. Chart No. VIII. is worked out from the 1918-19 records of the Oakland Technical High School when the enrollment was 2,157.

The study summarized in the charts has emphasized

several interesting facts as to the students of evening schools. One of the first items of interest is the comparatively large number of middle-aged and elderly people that are being benefitted by the schools. There appears to be nearly a "50-50" proportion of women and men attending the schools. Chart No. IV. was worked out from figures obtained during strike conditions when the attendance of the men was especially low. In the classes of the sessions after 7 P.M. one will find a majority of men. The late afternoon classes, being almost exclusively attended by women, increases their total attendance to a proportion approximately equal to that of the men. The occupational study is interesting, showing attendance of people from eighty six vocations. These facts strengthen our belief in the valuable service that the evening schools are doing. They are capable of reaching people of all ages from all vocations; and assisting materially in the development of a truly democratic educational system for this country.

Chart No. IV.

Chart to show comparative demand for various subjects offered. Also shows age groups of individuals taking advantage of the evening school opportunities. (Statistics secured under strike conditions. Fall Term 1919. Oakland Technical High School.)

Total Enrollment..4,211

	Class Enrollment										
				Age Grouping							
Subject	Total	Male	Female	16 21	21 25	26 30	31 35	36 40	41 45	46 50	Over 50
Academic											
Business English	15	10	5	6	4	2	2	1			
Dramatics	21	12	9	8	7	4		1	1		
French	18	1	17	1	1	3	9	2	1		1
Hist. & Economics	16	10	6	10	3		1				2
Journalism	15	8	7	1	4			1	2	3	4
Mathematics	13	7	6	7		2	2	1			
Pub. Speaking	20	10	10	2	4	2	3	2	3	2	2
Short Story Writing	13	4	9	1		2	1	3		4	2
Spanish	41	21	20	9	4	10	6	5	1	3	3
Americanization											
Americanization	10	7	3	1	6	2			1		
Naturalization	11	11			1	1	3	1	2		3
Arts & Crafts											
Basketry	17		17		4	6	3	4			
Commercial Art	28	20	8			6	12	10			
Interior Decoration	11	1	10	6		4	1				
Commercial											
Accounting	13	10	3	3	1	3	1	3		2	
Advertising	5	4	1	2	1		2				
Arith.,Sp.,Penman.	20	14	6	11	4	1	1	2	1		
Bookkeeping	36	18	18	5	11	8	9	2	1		
Civil Service	11	3	8	3	6	1	1				
Dictation	21		21	10	7	4					
Off. Appliances	14	2	12	6	2	1	3	2			
Parl.Law-Com.Law	20	13	7	6	2		3	3	3	1	2
Salesmanship	27	26	1	5	9	4	3	6			
Typing(for Blind)	13	8	5		1	3	3	3	2	1	
Typ.&Shorthand	149	27	122	64	34	19	14	10	5	2	1
Home Making											
Cooking	8		8	4	2	1	1				
Millinery	257		257	12	33	53	55	52	28	12	12
Dressmaking	67		67	7	1	7	19	13	13	43	3
Industrial											
Architect. Draft.	14	12	2		3	5	3	1	1		
Auto Ignition	31	31		3	9	8	4	3	2	2	

Chart No. IV. (con.)

				Age Grouping							
				16	21	26	31	36	41	46	Over
Subject	Total	Male	Female	21	25	30	35	40	45	50	50
Auto Practice	70	47	23	5	13	7	10	16	8	5	6
Auto Repairs	72	69	3	5	9	24	10	10	7	4	3
Cabinet Making	10	9	1		6	2			2		
Chemistry	11	9	2	3	4	1	3				
Elec. Shop.Practise	27	27		10	4	1	2	5	2	2	1
Elec. Engineer	23	23		6	8	2	2	4	1		
Forging	10	10		7	1			1			1
Machine Shop	37	37		9	5	6	4	6	4	2	1
Mech.Drawing	30	30		17	10	2		1			
Pattern Making	8	8		1	2	3	2				
Physics	14	12	2	9	2	1	2				
Radio	36	36		28	2	2		2	2		
Shop Mathematics	10	10		5	3		1	1			
Music											
Choral&Sight sing.	10	5	5	3	1	1	2	3			
Orchestra	7	2	5	4	1			2			
Phys.Training & Health											
Anatomy&Physiology	43		43	13	30						
Biology&Bact	40		40	19	16	5					
Chem.&Physics	6		6	2	4						
Dietetics	23		23	12	10	1					
First Aid	11		11	2	2	1			2	3	1
Gymnasium	26		26			11	6	5	2	1	1
Home Care of Sick	21		21		3	2	3	5	3	3	2

The enrollment shown in the above table is indicative of the relative demand for the various subjects offered in the locality from which Oakland Technical High School draws its evening students.

The numbers in each class were statistics secured at a time when the enrollment was considerably depleted due to the street car and ship yard strikes in the city.

The relative demand is not affected by this condition, however, The age grouping is also considered as indicative

of the normal condition.

The total enrollment of Oakland Technical High School for the first Fall Term of 1919 was 4,211.

Chart No. V.

Age and Sex Study
Oakland Technical High School 1919 (Strike conditions)

Age

Group yrs.	Total number
16-21	311
21-25	211
26-30	235
31-35	202
36-40	170
41-45	101
46-50	95
Over 50	51

(Some ages not given. "Indefinite")

Chart No. VI.

Sex

Sex	Total number
Female	876
Male	624
Total Both Sexes	1,500

The charts show that approximately 20% of the evening school students are young people from 16 to 21 years of age; 14% are between 21 and 25; 15% between 26 and 30; 14% between 31 and 35; 11% between 36 and 40; 7% between 41 and 45; 6% between 46 and 50; and nearly 4% over 50

years of age.

The sex study shows slightly less than 60% of the students to be women; and slightly more than 40% men. Under typical conditions the proportion is usually about "50-50".

Chart No. VII.

Chart study of the vocations represented in the total enrollment of Oakland Technical High School derived from individual Class Studies. These studies are derived from 1918-19 enrollment records. Number represented in attendace by vocation.

Vocation	No. represented	Vocation	No. represented
Auto Manufacturer	1	Gardners	3
Actors	2	Grammar School Students	4
Auto Repair Men	27	Housekeepers	111
Artists	4	High School Students	36
Bacteriologists	3	Insurance Agents	3
Business Men	18	Jewelry Engraver	1
Business Women	12	Librarians	4
Boilermaker	1	Linotype Operators	2
Bookkeepers	8	Laundrymen	1
Clerks(not stenographers)	111	Mining Assayers	5
Collectors	2	Miscellaneous	9
Carpenters	27	Machinists	31
Cashiers	2	Machinist Assitants	4
China Painters	5	Musicians	20
Club Women	3	Mill Workers	1
Chemists	1	Metallurgical Engineers	2
Contractors	2	Newspaper Reporters	1
Dressmakers	8	Not Known	25
Dentists	3	Nurses	22
Doll Makers	1	Notary Public	1
Draftsmen	4	Produce Merchant	1
Demonstrators	2	Pattern Maker	1
Ex-Manufacturer	1	Printers	1
Electrical Workers	15	Playground Workers	1
Engineers(steam & Civil)	4	Physicians	9
Factory Foreman	7	Photographers	2
Fur Sewers	2	Public Service	3
Farmers	1	Plasterers	3

Chart No. VII. (con.)

Vocation	No. represented	Vocation	No. represented
Private Secretaries	3	Timekeepers	1
Parents	2	Tailor	1
Purchasing Agents	4	Tailoresses	4
Rating Inspector's Bureau	1	Tobacco Merchant	1
Rubber Merchant	1	Teachers	35
Real Estate Dealer	1	Telephone Shopmen	2
Salesman (Outside)	6	Telephone Operators	9
Stock Clerks	5	U.S. Custom Service	1
Settlement Workers	1	U.S. Yeoman	1
Shipping Clerks	1	Unemployed	16
Social Service Worker	1	U. of C. Students	21
Sanitary Engineers	5	Wool & Leather Industry	2
Storage Battery Shopmen	7	Waitresses	1
Salesmen (City Trade)	16	Writers	7
Stenographers	70	Wire Metal Workers	1

The vocational study shows the housekeepers and clerks (in stores) tied for the largest representation with 111 each. These two are followed by stenographers with 70, teachers with 35, machinists 31, carpenters 27, auto repair men 27, nurses 22, musicians 20, salesmen (city trade) 16, electrical workers 15 etc. While each individual school will have a different personnel in its student body depending upon the community, yet the study indicates the opportunities for service when eighty six occupations benefit from one such school.

B. Relative Demand For Courses Offered

1. Courses Offered

This study was made on the assumption that the California Evening High Schools offer in their evening schools the courses that are fitted to California conditions. Chart No. VIII. is a complete list of the courses offered in thirty three evening high schools of the State during the school year 1919-20. The number after each course indicates the number of schools offering that particular course.

The following California high schools co-operated in furnishing information in regard to their course of study, methods, etc.:

- Alameda High School
- Alhambra City High School
- Berkeley
  - Berkeley High School
  - Burbank Intermediate High School
- Chaffey Union High School
- Fresno High School
- Gilroy High School
- Imperial Valley Union High School
- Long Beach High School
- Los Angeles
  - Central High School
  - Manual Arts High School
  - Maple Avenue Evening High School
  - Polytechnic High School
  - San Pedro High School
- Oakland
  - Fremont High School
  - Oakland High School
  - Technical High School
  - Vocational High School

Pasadena High School
Pomona High School
Redondo Union High School
Richmond High School
Sacramento High School
San Bernardino High School
San Diego High School
San Francisco
    Commerce High School
    Humboldt Evening High School
San Mateo Union High School
Santa Monica High School
Santa Barbara High School
Stockton High School
Venice Polytechnic High School
Vallejo High School

Chart No. VIII.

Chart showing the relative demand for various courses as indicated by the percentage of California High Schools offering various subjects. 1919 direct reports from 33 high schools are the bases for judgment. The number appearing after each course indicates the number of high schools including it in their courses of study.

(Afternoon, "Evening" Classes-9)

Subject	No. Schools	Subject	No. Schools
Angle Measurements	1	Brazing	1
Astronomy	2	Band	1
Agriculture (general)	1	Bookkeeping	28
American Reconstruction	1	Biology & Bacteriology	3
Assaying	2	Basketry	9
Americanization Teachers Tr.	1	Banking	1
American & Eng. Literature	4	Business Law	7
Auto Repairs	18	Business English	24
Auto Practise	12	Business Arithmetic	24
Auto Elec. & Ignition	7	Calculus	2
Architectural Drafting	6	Criminal Law & Criminology	1
Anatomy	1	Commercial Correspondence	6
Americanization	20	Concrete Construction	1
Acetylene Welding	10	Civics	3
Advertising	4	Civil Engineering	1
Accounting	5	Commercial Law	8
Algebra	11	Cooking	20

Chart No. VIII. (con.)

Subject	No. Schools	Subject	No. Schools
Commercial Teachers Tr.	1	Lip Reading	1
Commercial Art	9	Linotype	2
Civil Service	4	Library Methods	1
Choral	7	Moving Pictures (Educational)	2
Chemistry & Physics	4	Millinery	22
Chemistry I	14	Mechanics (Strength Materl)	3
Chemistry II	10	Measurements(School Admin)	1
Cabinet-Making	18	Machine Shop	14
Criminal Law	1	Machine Design	5
Deciduous Crops	1	Mining Law	1
Dictation	7	Navagation	1
Dressmaking	27	Naturalization	16
Dramatics	6	Oil Analysis	1
Dietetics	7	Office Appliances	4
Dancing	2	Orchestra	6
Design (Millinery)	2	Piano	1
Drawing (Free-Hand)	7	Power Sewing Machine	2
Drawing (Mechanical)	23	Poultry	1
Economics	2	Press Work	2
Estimating Bldg. Trades	1	Printing	6
English Composition	11	Penmanship	21
English (For Foreigners)	14	Parliamentary Law	1
Electrical Engineering	5	Public Speaking	11
Electric Shop	7	Psychology	1
Farm Accounts	1	Physical Tr. (Teachers)	1
French	16	Physical Tr. (Men)	8
Forging	9	Physical Tr. (Women)	10
Foreign Trade	1	Physics	3
First Aid	4	Photography	3
General Science	1	Pattern Making	2
Geometry	7	Plumbing	1
Gardening	1	Rabbits	1
House Planning	1	Radio	3
Hand Made Lace	1	Reading	1
History	4	Swimming	1
History of Architecture	1	Surveying	2
Household Utility	2	So. American Trade	1
Home Nursing (Care of Sick)	5	Sociology	1
Harmony	2	Spelling	19
Italian	1	Spanish	23
Interior Decorating	1	Stenotypy	1
Journalism	5	Short Story Writing	5

Chart No. VIII. (con.)

Subject	No. Schools	Subject	No. Schools
Shorthand	28	Typing (Blind)	1
Shop Mathematics	10	Typing	28
School Administration	1	Telegraphy	5
Salesmanship	9	Vocational Guidance	1
Ship Fitting	1	Vulcanizing	2
Sheet Metal Work	5	Vocal Music	6
Steam & Gas Engineering	2	Vocational Teachers Tr.	1
Traffic Management	1	Weaving	1
Tractor Theory	1	Work in Gram. School Subj.	5
Trigonometry	8		

2. Relative Demand for Various Subjects Offered

Since almost all attendance upon the sessions of the evening school is optional, it is evident that the demand for, and the popularity of various courses is indicated quite accurately by the enrollments in those courses. Individual class enrollment figures were secured from twenty three evening high schools. The following high schools co-operated with the author by furnishing these enrollments for the school year of 1919-20.

- Alameda High School
- Alhambra City High School
- Berkeley
    - Berkeley High School
    - Burbank Intermediate High School
- Chaffey Union High School
- Imperial Valley Union High School
- Long Beach High School

Los Angeles
    Central High School
    Manual Arts High School
    Maple Avenue Evening High School
    Polytechnic High School
Oakland
    Fremont High School
    Technical High School
    Vocational High School
Pasadena High School
Redondo Union High School
Richmond High School
San Bernardino High School
San Francisco Commerce High School
San Mateo High School
Santa Barbara High School
Santa Monica High School
Stockton High School

From these enrollments Chart No. IX. was computed. The chart shows the subjects offered by these twenty three schools. Following the name of the subject appears the individual enrollments in that class in the various schools. At the extreme right of the page, the total enrollments in that subject of the combined twenty three high schools is shown. From this chart can also be seen the number of schools (of the twenty three reporting enrollments) offering a given subject.

Chart No. IX.

Chart showing relative demand for various subjects offered in the courses of study of twenty three representative California Evening High Schools, as indicated by number enrolled in each course.

Subject	Class Enrollments Where Offered	Total Enrollment
Angle Measurements	25	25
Accounting	35..13..23..18	89
Algebra	13..18..6..13..15..15..9..92..18	199
Americanization	11.16.80.10.9.23.10.60.21.60.100.110..38	548
O. A. Welding	10.14.30.10.16.86	166
Advertising	10.5.71	86
Agriculture (General)	40	40
Anatomy & Physiology	43	43
Astronomy	11	11
Assaying	29	29
Auto Ignition	31.70.109.58	268
Auto Practice	87.70.30.75.80.80	422
Auto Repair	10.1.64.72.97.75.100.10.45.50.37.100	661
Architectural Drafting	14.1.12.42	69
Bookkeeping	10.13.5.13.34.15.30.38.129.69.36.59.30..20.21.40.125.20.42.96	824
Business English	14.8.19.12.24.30.15.40.27.35.120..19.31.54.63.32	533
Band	42..42	84
Business Arithmetic	20.20.25.87.30.3.29.25.125.15..52.54.68.48.26	388
Basketry	17..52..27..24..35	155
Biology & Bacteriology	40..10..38	88
Cabinet Making & Wood Work	12.10.15.8.33.10.11.20..32.27.50.38.87.16	369
Cooking	22..35..8..72..29..125..12..16..46	365
Chemistry (Industrial)	16.16.17.11.6.14.16.42.84.46	266
Concrete Construction	14	14
Commercial Law	14..20..16..20..41	111
Commercial Correspondence	90..45..28	163
Civil Engineering	14	14
Civics	19..16	35
Civil Service	11..21	32
Criminal Law	52	52
Comptometry	16	16

Chart No. IX. (con.)

Subject	Class Enrollments Where Offered	Total Enrollment
Commercial Art	15..28..28..30..53..38	192
Deciduous Crops	80	80
Drawing (Free Hand)	2..46	48
Dictation	30..21..65	116
Dramatics	16..21..16..36..63	152
Dietetics	23..10	33
Economics	21	21
English Composition	31..11..12..15..20..20..63	172
English (For Foreigners)	25.16.7.25.45.50.25.150.244.45.54	676
Electrical Engineering	33..23	56
Electric Shop Practice	27..55..10..20..78..30	210
Farm Accounts	10	10
Forge	5..14..10..10..43	82
French	6.5.30.14.18.53.26.35.12.22.76	297
First Aid	11..18	29
Grammar School Subjects	13..25..30..44..73	185
Geometry	13..18..6..13..15..15..26..12	118
History	39..16..15..16	96
Home Nursing	14..21..22	57
Interior Decorating	11	11
Literature..(Modern)	42..12..68	122
Linotype	12..19	31
Machine Shop	9.8.13.33.62.37.88.45.10.20.126.50	501
Mechanical Drawing	35.6.15.15.30.42.30.47.28.25.15.15.46.14.53.24	440
Mechanics..(Strength of Materials)	19	19
Moving Pictures (Educational)	400	400
Millinery	19.84.102.81.257.51.202.205.80.70.20.72.183.50	1,476
Mining Law	20	20
Naturalization	19.16.18.10.9.19.11.49.95.15.57.292..18	628
Office Appliances	148..14..31..10..126	329
Orchestra	42..7..12..30..47	138
Physical Training (Women)	7.17.40.26.32.52.25.43.47	289
Physical Training (Men)	49..39..33..25..39..48	234
Penmanship	19.14.25.18.160.30.52.17.15.25.47.17	439
Photography	54	54
Physics	10..14..6..19	49
Plumbing	20	20

Chart No. IX. (Con.)

Subject	Class Enrollments Where Offered	Total Enrollment
Printing	8..20..7..22	57
Poultry	30	30
Power Sewing Machine	78..77	155
Parliamentary Law	20	20
Pattern Making	8	8
Psychology	44	44
Radio	25..17	42
Rabbits	14	14
Reading	62	62
Spanish	18.14.10.29.18.41.72.62.41.75.56.188.56.105.50.37.74.90	1,036
Singing & Choral	36..10..80..37..42..80	285
Shorthand	149.22.15.24.31.22.65.21.264.31.85.15.6.114.60.50.53.49.54.89.62.25	1,306
Sewing & Dressmaking	30..22.10.14.10.52.32.60.67.226.27.45.60.125.52.45.128.30	1,037
Shop Mathematics	38..29..10	77
Short Story Writing	35..18..13	66
Sheet Metal Work	15..20..9..15	44
Salesmanship	15..41..27..25..9..71	188
Sociology	19	19
Spelling	30..161..30	221
Steam & Gas Engineering	16	16
Typing	24.34.24.5.32.47.65.55.132.259.149.215.25.10.174.80.75.97.106.54.173.108	1,943
Trigonometry	18..8..40..10	76
Typing (For Blind)	13	13
Telegraphy.(Morse)	16..25	41
Traffic Management	39	39
Vulcanizing	25..36	61

In the next chart we have drawn a comparison between the demands for courses as indicated by the fact that they are offered in the courses of study, and the demand for courses as indicated by enrollments. Fifty of the most popular subjects as indicated by the first method are shown

on the left side of the page. Fifty of the most popular subjects as determined by actual enrollments are placed on the right side of the page. In each case the courses are ranked according to apparent popularity.

Chart No. X.

Popularity of various courses offered in Evening Schools of California

Comparison of ranking as determined by the number of schools that offer various subjects (Chart No. VIII.) to a ranking determined by total enrollments in various courses (Chart No. IX.) during the year 1919-20.

No.Schools Offering Course. (33 Schools)	No. Schools	No. Schools	Total Enrollments. (23)	Total Enrollments
1.Typing	28	23	Typing	1,943
2.Bookkeeping	28	14	Millinery	1,476
3.Shorthand	28	22	Shorthand	1,306
4.Dressmaking	27	18	Sewing & Dressmaking	1,037
5.Business Arithmetic	24	18	Spanish	1,036
6.Business English	24	10	Bookkeeping	824
7.Spanish	23	11	English(for foreigner	676
8.Mechanical Drawing	23	12	Auto Repair	661
9.Millinery	22	13	Naturalization	628
10.Penmanship	21	13	Americanization	548
11.Americanization	20	16	Business English	533
12.Cooking	20	12	Machine Shop	501
13.Spelling	19	16	Mech. Drawing	440
14.Auto Repair	18	12	Penmanship	439
15.Cabinet Making & Wod W.	18	6	Auto Practise	422
16.French	16	1	Moving Pictures	400
17 Naturalization	16	15	Business Arithmetic	388
18.Machine Shop	14	14	Cabinet Making & W.W.	369
19.English (For Foreigners)	14	9	Cooking	365
20.Chemistry	14	5	Off. Appliances	329
21.Auto Practice	12	11	French	297
22.Public Speaking	11	9	Phys. Tr. (Women)	289
23.Algebra	11	6	Singing & Choral	285
24.Physical Tr.(Women)	10	4	Auto Ignition	268
25.English Composition	10	10	Chemistry	266

Chart No. X. (con.)

No.	Schools Offering Course (33 Schools)	No. Schools	No. Schools	Total Enrollments (23)	Total Enrollments
26.	O.A.Welding	10	6	Physical Tr.(Men)	234
27.	ChemistryII	10	3	Spelling	221
28.	Shop Mathematics	10	6	Elec. Shop Practise	210
29.	Forge Work	9	9	Algebra	199
30.	Basketry	9	8	Public Speaking	198
31.	Commercial Art	9	6	Commercial Art	192
32.	Salesmanship	9	6	Salesmanship	188
33.	Physical Tr.(Men)	8	5	Gram.School Subjects	185
34.	Trigonometry	8	7	English Compostion	172
35.	Commercial Law	7	6	O.A.Welding	166
36.	Dictation	7	3	Commercial Correspond.	163
37.	Dietetics	7	2	Power Sewing Machine	155
38.	FreeHand Drawing	7	5	Basketry	155
39.	Choral	7	5	Dramatics	152
40.	Geometry	7	5	Orchestra	138
41.	Auto Electricity	7	3	Literature(Modern)	122
42.	Architectural Draft	6	8	Geometry	118
43.	Commercial Correspondence	6	3	Dictation	116
44.	Dramatics	6	5	Commercial Law	111
45.	Printing	6	4	History	96
46.	Vocal Music	6	4	Accounting	89
47.	Elec.Engineering	5	3	Journalism	88
48.	Home Nursing	5	3	Biol.& Bacteriology	88
49.	Journalism	5	3	Advertising	86
50.	Machine Design	5	3	Short Story Writing	86

C. Manner in Which Some Schools Now Meet the Vocational Need in Certain Lines of Work

Space would not permit a description of all vocational work in the various high schools visited. We will mention briefly some strikingly practical types of vocational work which have been observed in certain high schools during the past year.

One of the definitely vocational courses is found in the evening high school at Santa Monica. The Automobile Mechanical Course is planned to require one year for completion. The first half year's work is devoted to the theory, adjustments, operation, testing, care, repair and driving of automobiles. Special attention is given to the magneto, electric starter, coils, batteries, timing, carburetor adjustments, power testing and "trouble shooting". The class is limited to ten students so that the instructor can give individual attention. Each student before completing the course must have completed a definite list of machine and repair operations satisfactorily, an accurate check being kept on each man by the instructor on a printed form listing the operations. The instructor is a technical college graduate, and an experienced machine and auto shop man.

Manual Arts High School of Los Angeles is doing unusually practical work in Machine Shop, having made a large

proportion of the machines and other machine shop equipment for Lincoln and Jefferson High Schools, the new "Opportunity High Schools" where vocational work is to be emphasized.

Chaffey Union High School, at Ontario, California, is meeting the vocational needs of a rural district in an unusual way. The high school district comprises an area of approximately three hundred and fifty square miles, including within its limits six towns in addition to Ontario. In addition to the main evening school at the high school, five branch evening schools are maintained in the other towns of the district. These schools are under the supervision and instruction of the high school faculty. Special courses are maintained for agriculturists in Farm Accounting, Business Law, Business Arithmetic, and a short course for deciduous growers which has an enrollment of eighty at present. That the school is meeting the vocational need in a satisfactory manner was emphasized by an incident that occurred during the day of the author's visit to this school. A young man who was head feeder upon a large ranch twelve miles from the high school came in to enroll for evening school work of which he felt the need. He is now voluntarily traveling twenty four miles daily on his motorcycle, after his day's work, in order to enjoy the benefits of the work offered.

Fremont High School, Oakland, offers two courses in its evening high school of special merit from the practical standpoint. One of these classes is for typists. The instructor is a lady who has had several years of teaching experience; but now is employed in an Oakland business office during the day. This class is conducted strictly according to actual office methods and office discipline. The students take care of their machines; and do laid out work as they would do in a well-organized business office. Another class in the same school of special interest from the vocational standpoint is the class in Poultry. This class is composed of thirty individuals now engaged in poultry raising. The attendance of this class is unusually regular; and the interest is keen. The instructor is both an Agricultural College graduate; and a practical poultry raiser, being a regularly qualified instructor in Vocational Agriculture under the provisions of the Smith-Hughes Act.

One of the courses, offered in the evening school at Technical High School, Oakland, is for nurses in training. This course includes Biology and Bacteriology, Chemistry and Physics, Anatomy and Physiology, and Dietetics. The enrollment this year is forty three. The Fabiola, East Bay, Providence and Merritt Hospitals co-operate with the high

school in offering these courses. Another course of especial interest is the work in Industrial Chemistry under the supervision of Mr. Massey. The personnel of the class is made up almost exclusively of those in the industrial chemistry work in the various Oakland factories.

For work along purely vocational lines, there is no evening school in California that compares with the type of work done in the Maple Avenue Evening School of Los Angeles. This school is conducted in the basement rooms of the Labor Temple; and has previously been known as the Labor Temple Evening School. Here the evening school work is almost exclusively vocational. Although they are somewhat restricted for space, they are at present accommodating twenty men in Electric Shop, sixteen in Oxy-Acetylene Welding, thirty in Commcercial Art, twenty five in Vulcanizing, twenty women in Millinery, fifteen men in Mechanical Drawing, twenty in Lead Joint Wiping, twenty five in Angle Measurements, twenty in Sheet Metal Work, twelve in an expert orchestra, and seventy eight women in Power Sewing Machine Operation.

In the work in Commcercial Art especial attention is given to scene painting, interior decorating, and camouflage work suited to moving picture photography needs. The Power Sewing Machine class is conducted in co-operation with the Boss and Stronghold factories, the instruction taking place

in the factories under school supervision. A pre-requisite to entrance to many of the courses is that the candidate be a journeyman in his trade. The instruction involves, in every case, actual active participation in the process. In addition to the regular class many visitors attend to observe; and also with the hope that one of the regular students may be absent so that there may be an opportunity to take his place as an active participant. The waiting list in the school this year averaged one hundred.

Other schools achieving practical success with certain courses can be briefly mentioned. Alameda offers a course in Mechanical Drawing under an instructor who is a graduate engineer, as well as having had much practical trade experience in metal work and ship yards. Central Evening High school of Los Angeles has an enrollment of seventy seven in a Power Sewing Machine class. Polytechnic High School, Los Angeles, has unusually practical instruction in Vulcanizing. They do much practical repair work. A feature of their Electric Shop Course is a recently constructed frame building with walls of unusual thickness which is used for vocational classes in wiring and fixture installation. They also have a separate building which contains equipment for both Wet and Fire Assaying. They have enrollments of thirty six in Vulcanizing, twenty in Wiring, and twenty nine in Assaying

classes.

Vocational High School, Oakland, offers practical courses in Printing and Linotype, doing much of the printing work for the Oakland school system. The work done for the schools includes forms, vouchers, placards, courses of study, school papers, etc. These classes have a combined enrollment of forty one, the class in Linotype including nineteen students. Probably the most complete commercial courses among California evening high schools are offered by the Evening School of Commerce of San Francisco. The situation of San Francisco with respect to the world's trade causes these courses to be of direct vocational value. Oakland High School includes in the evening school program yet another type of strictly vocational instruction. This course is a class for the training of vocational teachers under the instruction of Mr. Charles Jacobs and Mr. Kerchen.

An interesting department is conducted in Humboldt Evening School of San Francisco. From the vocational standpoint, the Technical Department of this school is unusually interesting. They do no actual manipulation of tools or machines in this department; but confine their instruction to teaching practical drafting, mathematics and allied subjects suited to the various mechanical and engineering vocations. The instructor of each trade teaches all the

subjects essential to mastery of the trade. Of the twelve instructors in this department, all are practical tradesmen with at least eleven years' of trade experience. Mr. Roberts, the head of the department, is a consulting engineer from 8 A.M. to 5 P.M. daily and an educator from 7:15 to 9:15 five evenings per week.

While the foregoing is not an all-inclusive list of classes in vocational work in which the instruction is successful from a practical point of view, yet the most vital need of the vocational courses of the evening schools is to eliminate all impractical features.

IV. The California Occupational Field

The most recent available statistics show that, of those ten years of age and over, there are 1,135,489 males and 872,209 females in California. Of this number there were engaged in all occupations 932,752 males and 174,916 females. Manufacturing and mechanical industries gave employment to 263,480 males and 30,096 females.

A study of the facts conveyed by Charts XI, XII, and those which follow show a wide distribution of occupation in the state. While all occupations may not have a teachable content suitable for inclusion in our evening school curricula, yet a study of the evening schools of the state convinces one that occupational continuation instruction and occupational preparatory instruction have become firmly established as an integral part of school training. The charts in Part IV are intended to show the scope of the problem that may be partially solved by vocational training in the evening high schools of California in the future.

A. Industry

Industry is a rapidly developing field in California. Excellent shipping facilities combined with proximity to

extensive mining regions, large timber supply, good fishing grounds, productive fruit regions, and a rapid development of cotton growing in the Imperial Valley, cause the future of Industry in California to appear certain of continued rapid growth. For the purpose of this study, the term Industry will be interpreted as including manufacturing and mechanical enterprises.

Chart No.XI has been worked out from statistics included in the Eighteenth Report of the Bureau of Labor Statistics of the State of California,1918. The figures are derived from reports from two thousand three hundred seventy nine California establishments. The chart shows the number of establishments reporting of each class, the numbers of males and females engaged in managerical, clerical, and wage-earning capacities and the total annual and average wage for each of the three classifications of each type of industry. Table LXXXII summarizes the findings for the two thousand three hundred seventy nine establishments reporting.

Chart No. XII is derived from the United States Census returns of 1910. It shows the numbers engaged in the various mechanical and manufacturing industries according to specific occupation for the state of California.

Chart No. XI.

No. Employees & Wage Rates for 2,379 California Establishments

	Male	Female	Annual Wage	Av.Wage
TableI-Agricultural Implements - (10 Establishments)				
Officers, Supt.&Mgrs.	58		$ 222,504	$ 3,834
Clerks, Sten.&Salesmen	307	86	352,952	897
Wage Earners	2,717		2,864,491	842
Table II -Artificial Stone, Clay & Concrete Products-(29 Estab.)				
Officers, Supt, &Mgrs.	62		145,265	2,342
Clerks, Sten.& Salesmen	36	14	53,493	1,069
Wage Earners	598	1	504,046	841
Table III-Automobiles (including bodies & parts-58 Estab.)				
Officers, Supt.&Mgrs.	111	1	281,553	2,513
Clerks. Sten.&Salesmen	179	76	265,602	1,045
Wage Earners	1,741	23	1,655,284	932
Table IV-Awnings, Tents & Sails -(12 Establishments)				
Officers, Supt.&Mgrs.	22	1	42,843	1,862
Clerks, Sten.&Salesmen	9	9	15,185	843
Wage Earners	115	147	148,754	567
Table V-Bages, other than paper (3 Establishments)				
Officers, Supt.&Mgrs.	11		105,912	9,628
Clerks, Sten.&Salesmen	31	13	58,968	1,340
Wage Earners	154	285	157,958	395
Table VI- Bakery Products- (85 Establishments)				
Officers, Supt.&Mgrs.	144	5	446,421	2,995
Clerks, Sten.&Salesmen	817	189	1,012,656	1,106
Wage Earners	1,681	816	2,052,963	781
Table VII- Baking Powder & Yeast- (3 Establishments)				
Officers, Supt.&Mgrs.	7		20,500	2,928
Clerks, Sten.&Salesmen	18	12	40,835	1,361
Wage Earners	69	10	75,104	949
Table VIII- Boilers & Tanks- (9 Establishments)				
Officers, Supt.&Mgrs.	27		74,764	2,769
Clerks, Sten.&Salesmen	18	8	29,457	1,132
Wage Earners	368		615,588	1,645

8

Chart No. XI. (con.)

No. Employees & Wage Rates for 2,379 California Establishments

	Male	Female	Annual Wage	Av. Wage
Table IX-Boots & Shoes- (4 Establishments)				
Officers, Supt.&Mgrs.	10		$ 33,262	$ 3,326
Clerks, Sten.&Salesmen	8	7	17,868	1,191
Wage Earners	293	155	324,164	723
Table X- Boxes, Bags, Cartons, etc. Paper- (26 Estab.)				
Officers, Supt.&Mgrs.	62	3	190,116	2,924
Clerks, Sten.&Salesmen	57	38	99,169	1,049
Wage Earners	505	667	561,418	478
Table XI-Boxes, Wood- (14 Establishments)				
Officers, Supt.&Mgrs.	36		82,078	2,279
Clerks, Sten.&Salesmen	24	8	36,262	1,133
Wage Earners	778	76	568,692	665
Table XII-Brass, Bronze & Copper Products- (24 Estab.)				
Officers, Supt.&Mgrs.	42	1	106,924	2,486
Clerks, Sten.&Salesmen	45	12	57,835	1,014
Wage Earners	419	13	443,435	1,026
Table XIII-Brick & Tile- (30 Establishments)				
Officers, Supt.&Mgrs.	58	2	117,195	1,953
Clerks, Sten.&Salesmen	44	17	70,068	1,194
Wage Earners	1,257	33	837,524	649
Table XIV- Brooms & Brushes- (3 Establishments)				
Officers, Supt.&Mgrs.	8		12,300	1,537
Clerks, Sten.&Salesmen	33		30,800	933
Wage Earners	32	2	20,705	608
Table XV- Butter, Cheese & Condensed Milk- (23 Estab.)				
Officers, Supt.&Mgrs.	54	2	135,444	2,418
Clerks, Sten.&Salesmen	162	45	228,317	1,102
Wage Earners	434	53	504,557	1,036
Table XVI- Cans, Tin- (5 Establishments)				
Officers, Supt.&Mgrs.	13		37,021	2,847
Clerks, Sten.& Salesmen	27	12	38,967	999
Wage Earners	1,013	219	1,016,427	825

Chart NO. XI. (con.)

No. Employees & Wage Rates for 2,379 California Establishments

	Male	Female	Annual Wage	Av.Wage
Table XVII- Canning & Packing of Fish- (25 Estab.)				
Officers, Supt.&Mgrs.	72	2	$ 248,066	$ 3,352
Clerks, Sten.&Salesmen	51	17	65,904	969
Wage Earners	1,489	1,639	1,163,704	372
Table XVIII-Canning & Preserving of Fruits & Veg.- (127 Estab.)				
Officers, Supt.&Mgrs.	269	17	703,511	2,459
Clerks, Sten.&Salesmen	371	248	695,046	969
Wage Earners	8,979	14,233	6,131,421	264
Table XIX- Carbonated Beverages- (3 Establishments)				
Officers, Supt.&Mgrs.	6		11,733	1,955
Clerks, Sten.&Salesmen	1		600	600
Wage Earners	30		30,080	1,002
Table XX- Carriages, Wagons & Materials- (4 Estab.)				
Officers, Supt.&Mgrs.	7		10,220	1,460
Clerks, Sten.&Salesmen		1	105	105
Wage Earners	21		22,593	1,075
Table XXI-Caskets & Undertakers' Supplies- (3 Estab.)				
Officers, Supt.&Mgrs.	7		20,300	2,900
Clerks, Sten.&Salesmen	16	2	23,881	1,326
Wage Earners	39	15	50,111	927
Table XXII- Cement- (7 Establishments)				
Officers, Supt.&Mgrs.	41		202,870	4,948
Clerks, Sten.&Salesmen	584	29	325,009	530
Wage Earners	1,965	5	1,879,593	954
Table XXIII-Chemicals-including Chemical Fertilizers-(30 Est.)				
Officers, Supt.&Mgrs.	63	2	134,649	2,071
Clerks, Sten.&Salesmen	73	19	96,715	1,051
Wage Earners	1,148	6	909,788	788
Table XXIV-Clothing-Mens'- (35 Establishments)				
Officers, Supt.&Mgrs.	64		201,883	3,013
Clerks, Sten.&Salesmen	139	88	282,798	1,245
Wage Earners	429	2,294	1,439,306	420

Chart No. XI. (con.)

No. Employees & Wage Rates for 2,379 California Establishments

	Male	Female	Annual Wage	Av.Wage
Table XXV-Clothings-Womens'- (57 Establishments)				
Officers, Supt.&Mgrs.	52	6	$ 171,849	$ 2,962
Clerks, Sten.&Salesmen	94	86	148,614	825
Wage Earners	271	1,006	819,147	641
Table XXVI-Coffee & Spice Roasting & Grinding-(17 Estab.)				
Officers, Supt.&Mgrs.	51	1	260,190	5,003
Clerks, Sten.& Salesmen	299	116	514,597	1,239
Wage Earners	208	192	270,314	675
Table XXVII- Confectionery- (51 Establishments)				
Officers, Supt.&Mgrs.	90	2	233,801	2,541
Clerks, Sten.&Salesmen	285	172	433,976	949
Wage Earners	620	1,306	879,088	456
Table XXVIII-Cooperage & Wooden Goods- (11 Estab.)				
Officers, Supt.&Mgrs.	23		75,051	3,263
Clerks, Sten.&Salesmen	13	10	36,450	1,584
Wage Earners	511	123	497,728	785
Table XXIX-Electrical Machinery, Apparatus & Supplies-(15 Est.)				
Officers, Supt.&Mgrs.	34	1	69,962	1,990
Clerks, Sten.&Salesmen	70	26	89,269	929
Wage Earners	325	178	261,813	520
Table XXX- Electroplating- (4 Establishments)				
Officers, Supt.&Mgrs.	5		6,735	1,347
Clerks, Sten.&Salesmen	1		1,653	1,653
Wage Earners	26		29,356	1,129
Table XXXI-Engines & Pumps-(Gas) - (21 Establishments)				
Officers, Supt.&Mgrs.	93	1	376,739	4,007
Clerks, Sten.&Salesmen	269	89	254,334	710
Wage Earners	2,154	9	1,907,116	881
Table XXXII- Explosives- (5 Establishments)				
Officers, Supt.&Mgrs.	22		65,444	2,520
Clerks, Sten.& Salesmen	57	13	93,810	1,340
Wage Earners	687	112	632,261	632

Chart No. XI. (con.)

No. Employees & Wage Rates for 2,379 California Establishments

	Male	Female	Annual Wage	Av.Wage
Table XXXIII- Flour & Grist Mill Products- (26 Estab.)				
Officers, Supt.&Mgrs.	67	2	$ 185,563	$ 2,689
Clerks, Sten.&Salesmen	285	73	415,765	1,161
Wage Earners	1,011	93	953,079	863
Table XXXIV- Food Preparations- (40 Establishments)				
Officers, Supt.&Mgrs.	63	1	148,692	2,323
Clerks, Sten.&Salesmen	112	40	153,791	1,011
Wage Earners	331	249	304,542	525
Table XXXV- Foundry & Machine Shop Products- (147 Estab.)				
Officers, Supt.&Mgrs.	338	5	787,343	2,295
Clerks, Sten.&Salesmen	527	185	826,764	1,162
Wage Earners	5,742	15	5,699,786	990
Table XXXVI-Furniture, Bank & Store Fixtures- (50 Estab.)				
Officers, Supt.&Mgrs.	63	3	148,276	2,246
Clerks, Sten.&Salesmen	106	30	156,858	1,153
Wage Earners	1,139	34	1,067,733	910
Table XXXVII- Gas (In containers)- (7 Establishments)				
Officers, Supt.&Mgrs.	13		23,216	1,785
Clerks, Sten.&Salesmen	28	22	35,643	712
Wage Earners	62		61,664	994
Table XXXVIII-Gas & Electric Fixtures- (11 Estab.)				
Officers, Supt.&Mgrs.	22		63,232	2,874
Clerks, Sten.&Salesmen	71	19	79,369	881
Wage Earners	268	11	268,026	960
Table XXXIX- Glass, Cutting & Ornamenting- (14 Estab.)				
Officers, Supt.&Mgrs.	27		62,950	2,331
Clerks, Sten.&Salesmen	71	19	148,424	1,649
Wage Earners	1,626	33	1,095,569	660
Table XL- Gloves, Leather- (15 Establishments)				
Officers, Supt.&Mgrs.	20	3	74,631	3,245
Clerks, Sten.&Salesmen	24	19	43,537	1,012
Wage Earners	392	564	330,046	345

Chart No. XI. (con.)

No. Employees & Wage Rates for 2,379 California Establishments

	Male	Female	Annual Wage	Av.Wage
Table XLI- Glue & Tallow- (5 Establishments)				
Officers,Supt.&Mgrs.	9		$ 17,405	$ 1,933
Clerks,Sten.&Salesmen	6	4	11,480	1,148
Wage Earners	94		91,109	969
Table XLII- Hats & Caps,Mens' -(7 Establishments)				
Officers,Supt.&Mgrs.	12	2	27,380	1,955
Clerks,Sten.&Salesmen	20	10	40,808	1,360
Wage Earners	120	77	126,760	643
Table XLIII- Ice, Manufactured- (52 Establishments)				
Officers,Supt.&Mgrs.	88		195,778	2,224
Clerks,Sten.&Salesmen	156	14	180,894	1,064
Wage Earners	739	1	696,303	940
Table XLIV-Iron & Steel Forgings,Bolts,Etc.- (19 Estab.)				
Officers,Supt.&Mgrs.	49		167,632	3,421
Clerks,Sten.&Salesmen	74	17	75,007	824
Wage Earners	1,637	11	1,467,635	890
Table XLV-Iron & Steel,Structural,Ornamental- (38 Estab.)				
Officers,Supt.&Mgrs.	115	3	344,326	2,918
Clerks,Sten.&Salesmen	192	50	225,436	931
Wage Earners	3,218		2,884,237	896
Table XLVI- Jewelry- (16 Establishments)				
Officers,Supt.&Mgrs.	13		23,390	1,799
Clerks,Sten.&Salesmen	13	8	13,985	665
Wage Earners	296	73	394,328	1,068
Table XLVII- Knit Goods- (10 Establishments)				
Officers,Supt.&Mgrs.	22	3	34,302	1,372
Clerks,Sten.&Salesmen	31	9	52,494	1,312
Wage Earners	73	283	173,652	487
Table XLVIII- Laundries- (Steam)- (126 Establishments)				
Officers,Supt.&Mgrs.	197	14	424,523	2,011
Clerks,Sten.&Salesmen	670	382	1,056,726	836
Wage Earners	1,945	4,473	3,815,551	613

Chart No. XI. (con.)

No. Employees & Wage Rates for 2,379 California Establishments

	Male	Female	Annual Wage	Av. Wage
Table XLIX- Leather Goods- (17 Establishments)				
Officers, Supt.&Mgrs.	29	1	$ 99,797	$ 3,326
Clerks, Sten.&Salesmen	94	31	131,894	1,055
Wage Earners	271	193	176,326	380
Table L- Lumber Industry-Planing Mills- (63 Estab.)				
Officers, Supt.&Mgrs.	121	1	255,717	2,096
Clerks, Sten.&Salesmen	208	38	279,506	1,136
Wage Earners	1,918	39	1,838,187	939
Table LI- Lumber Industry-Sash & Door Mills- (53 Estab.)				
Officers, Supt.&Mgrs.	135	2	342,533	2,500
Clerks, Sten.&Salesmen	328	63	493,111	1,261
Wage Earners	4,277	29	3,401,559	789
Table LII-Lumber Industry-Saw Mills, Logging Operations-(37 Est)				
Officers, Supt.&Mgrs.	172		540,863	3,144
Clerks, Sten.&Salesmen	458	127	592,925	1,013
Wage Earners	10,922	88	9,640,604	875
Table LIII-Marble & Stone Work- (11 Establishments)				
Officers, Supt.&Mgrs.	20		49,360	2,468
Clerks, Sten.&Salesmen	24	8	38,321	1,197
Wage Earners	288		308,694	1,071
Table LIV- Mattresses, Pillows & Bedding- (22 Estab.)				
Officers, Supt.&Mgrs.	54	2	116,209	2,075
Clerks, Sten.&Salesmen	58	20	76,988	987
Wage Earners	478	81	447,502	557
Table LV- Metal Signs, Stencils & Rubber Stamps- (4 Estab.)				
Officers, Supt.&Mgrs.	6		13,180	2,196
Clerks, Sten.&Salesmen	9	2	9,974	906
Wage Earners	60	32	51,332	557
Table LVI- Millinery- (18 Establishments)				
Officers, Supt.&Mgrs.	18	1	50,880	2,677
Clerks, Sten.&Salesmen	43	43	72,341	951
Wage Earners	43	239	180,702	640

Chart No. XI. (con.)

No. Employees & Wage Rates for 2,379 California Establishments

	Male	Female	Annual Wage	Av.Wage
Table LVII- Oil Stoves & Oil Burners- (6 Estab.)				
Officers Supt.&Mgrs.	9		$ 24,472	$ 2,719
Clerks, Sten.&Salesmen	15	6	24,827	1,182
Wage Earners	98	3	114,902	1,137
Table LVIII-Oil Well Tools & Supplies- (9 Establishments)				
Officers, Supt.&Mgrs.	24		54,453	2,268
Clerks, Sten.&Salesmen	42	10	51,507	990
Wage Earners	360	9	293,911	796
Table LIX-Packing & Processing of Dried Fruits-(59 Estab.)				
Officers, Supt.&Mgrs.	139	3	404,394	2,847
Clerks, Sten.&Salesmen	236	124	456,927	1,757
Wage Earners	3,378	2,435	1,936,611	333
Table LX- Paints & Varnishes- (20 Establishments)				
Officers, Supt.&Mgrs.	40	2	108,695	2,587
Clerks, Sten.&Salesmen	98	33	138,955	1,060
Wage Earners	502	34	433,571	808
Table LXI- Paper & Paper Goods- (12 Establishments)				
Officers, Supt.&Mgrs.	25	1	96,928	3,728
Clerks, Sten.&Salesmen	37	38	91,578	1,221
Wage Earners	686	228	664,797	727
Table LXII- Patent Medicine, Druggist Preparations- (14 Estab.)				
Officers, Supt.&Mgrs.	33	2	94,249	2,692
Clerks, Sten.&Salesmen	34	72	117,383	1,107
Wage Earners	122	165	175,358	611
Table LXIII- Petroleum Refining- (24 Establishments)				
Officers, Supt.&Mgrs.	315		1,381,074	4,384
Clerks, Sten.&Salesmen	1,800	330	2,538,526	1,191
Wage Earners	11,728	66	14,092,217	1,194
TableLXIV-Photo Engraving, Electrotyping- (22 Estab.)				
Officers, Supt.&Mgrs.	38	2	97,838	2,445
Clerks, Sten.&Salesmen	46	28	45,684	617
Wage Earners	267	44	317,153	1,019

Chart No. XI. (con.)

No. Employees & Wage Rates for 2,379 California Establishments

	Male	Female	Annual Wage	Av Wage
Table LXV- Printing & Publishing- (155 Establishments)				
Officers, Supt.&Mgrs.	278	10	$ 830,691	$ 2,884
Clerks, Sten.&Salesmen	1,326	410	2,006,663	1,155
Wage Earners	2,802	742	3,403,733	960
Table LXVI- Rock Quarrying & Crushing- (18 Establishments)				
Officers, Supt &Mgrs.	42	1	103,569	2,408
Clerks, Sten.&Salesmen	50	11	56,823	931
Wage Earners	953	4	700,618	732
Table LXVII- Roofing Materials & Building Paper- (3 Estab.)				
Officers, Supt.&Mgrs.	36		167,848	4,662
Clerks, Sten.&Salesmen	156	24	234,522	1,302
Wage Earners	496	15	324,554	635
Table LXVIII- Rubber Goods, Specialties- (13 Estab.)				
Officers, Supt &Mgrs.	30	3	90,818	2,752
Clerks, Sten &Salesmen	158	100	189,753	735
Wage Earners	565	55	549,983	884
Table LXIX- Salt- (8 Establishments)				
Officers, Supt &Mgrs.	22	3	63,185	2,527
Clerks, Sten &Salesmen	15	3	24,929	1,384
Wage Earners	278	23	306,940	1,019
Table LXX- Sheet Metal Products- (53 Establishments)				
Officers, Supt &Mgrs.	96	2	281,251	2,869
Clerks, Sten &Salesmen	167	45	222,590	1,049
Wage Earners	1,175	12	1,187,332	1,000
Table LXXI- Ship Building- (18 Establishments)				
Officers, Supt &Mgrs.	111		353,245	3,182
Clerks, Sten &Salesmen	677	135	887,654	1,093
Wage Earners	20,318		14,470,643	712
Table LXXII- Slaughtering & Meat Packing- (42 Estab.)				
Officers, Supt &Mgrs.	85	3	263,789	2,997
Clerks, Sten.&Salesmen	550	55	724,417	1,197
Wage Earners	2,113	128	2,134,348	952

Chart NO. XI. (con.)

No. Employees & Wage Rates for 2,379 California Establishments

	Male	Female	Annual Wage	Av.Wage
Table LXXIII- Smelting & Refining- (3 Establishments)				
Officers, Supt &Mgrs.	13		$ 72,790	$ 5,599
Clerks, Sten &Salesmen	59	9	140,666	2,068
Wage Earners	658	25	609,063	890
Table LXXIV- Soap, Washing Powder- (10 Establishments)				
Officers, Supt.&Mgrs.	21		58,680	2,794
Clerks, Sten.&Salesmen	28	12	55,123	1,378
Wage Earners	301	109	264,371	644
Table LXXV- Stoves & Furnaces- (6 Establishments)				
Officers, Supt &Mgrs.	14		27,810	1,986
Clerks, Sten &Salesmen	19	4	25,974	1,129
Wage Earners	186		217,634	1,170
Table LXXVI- Sugar Refining- (12 Establishments)				
Officers, Supt &Mgrs.	103	9	419,048	3,741
Clerks, Sten.&Salesmen	317	58	375,988	1,002
Wage Earners	5,910	124	3,852,709	638
Table LXXVII- Tanning- (21 Establishments)				
Officers, Supt.&Mgrs.	52	2	173,145	3,206
Clerks, Sten.&Salesmen	37	28	78,324	1,204
Wage Earners	1,396	31	1,174,303	822
Table LXXVIII- Tobacco Manufactures- (32 Establishments)				
Officers, Supt.&Mgrs.	27	7	107,383	3,158
Clerks, Sten.&Salesmen	146,	43	226,518	1,198
Wage Earners	696	575	735,287	578
Table LXXIX- Trunks, Valises- (10 Establishments)				
Officers, Supt.&Mgrs.	13		19,218	1,478
Clerks, Sten.&Salesmen	18	5	20,237	879
Wage Earners	167	42	140,253	671
Table LXXX- Wire Work, Rope, Netting, Etc.- (10 Estab.)				
Officers, Supt.&Mgrs.	20	2	83,984	3,817
Clerks, Sten &Salesmen	36	5	49,452	1,206
Wage Earners	370	1	310,496	836

Chart No. XI. (con.)

No. Employees & Wage Rates for 2,379 California Establishments

	Male	Female	Annual Wage	Av.Wage
Table LXXXI- All Other Industries- (144 Establishments)				
Officers, Supt.&Mgrs.	101	16	$1,120,406	$ 9,576
Clerks, Sten.&Salesmen	796	340	1,200,794	1,057
Wage Earners	4,582	2,665	5,568,120	768
Table LXXXII-(Total for 2,379 Establishments Reporting)				
Officers, Supt.&Mgrs.	5,193	167	16,166,392	3,016
Clerks, Sten.&Salesmen	14,797	4,570	21,102,785	1,089
Wage Earners	131,118	37,805	120,808,772	715

Chart No. XII.

Manufacturing & Mechanical Industries, Occupational Distribution

Occupation	Males	Females
Apprentices to bldg. trades	1,153	
Apprentices to dressm'g&millinery	2	351
Other apprentices	2,337	105
Bakers	3,755	145
Blacksmiths	10,244	1
Forge men, hammermen, welders	25	
Boiler makers	1,783	
Brick & stone masons	3,368	
Builders & bldg. contractors	10,358	59
Butchers & dressers	518	
Cabinet makers	1,829	1
Carpenters	37,140	3
Compositors, linotypes, typesetters	4,168	414
Coopers	708	
Dressmakers	37	14,114
Dyers	123	32
Electrcians, electrical engineers	8,326	5
Electrotpyers, stereotypers	117	7
Lithographers	296	18
Engineers, Mechanical	795	
Engineers, stationary	11,160	1
Engravers	417	7
Buffers & polishers	185	6
Filers	345	1
Grinders	90	
Firemen(except locomotive&Fire Dt.	3,310	
Formen and overseers (factories)	3,003	228
Furnacemen & smeltermen	137	
Heaters	63	
Ladlers, pourers,	2	
Puddlers	9	
Glass blowers	246	1
Glodsmiths & silversmiths	133	1
Jewelers & lapidaries	183	8
Jewelers & watchmakers(outside)	859	19
Laborers		
Building & hand trades	38,494	402
General	36,496	401
Helpers, Bldg. & hand trades	1,998	1
Fertilizer factories	98	

Chart No. XII. (con.)

Manufacturing & Mechanical Industries, Occupational Distribution

Occupation	Males	Females
Paint factories	170	17
Powder, cartridge, fireworks	201	4
Other Chemical factories	336	10
Brick, tile, terra cotta	1,501	15
Glass factories	166	3
Lime, cement, gypsum factories	1,859	8
Marble & stone yards	86	
Potteries	603	
Automobile factories	20	1
Blast furnaces & rolling mills	798	3
Car & railroad shops	234	
Wagon & carriage factories	21	
Other iron & steel workers	1,874	6
Brass mills	17	
Copper factories	286	
Lead & zinc factories	9	
Tinware, enamel ware	101	16
Other metal factories	17	1
Furniture, piano, organ factories	64	1
Saw & planing mills	4,783	8
Other wood working factories	158	24
Cotton mills	60	3
Woolen mills	25	1
Silk mills	7	7
Other textile mills	137	24
Charcoal & coke workers	16	
Cigar & tobacco factories	32	6
Clothing industries	52	22
Electric light & power plants	598	2
Electrical supply factories	55	6
Bakeries	97	16
Butter & cheese factories	219	6
Fish canning & packing	1,241	2
Flour & grain mills	212	4
Fruit & vegetable canning	790	141
Slaughter & packing house	648	33
Sugar factories & refineries	675	10
Other food factories	120	43
Gas works	853	1
Oil refineries	462	1
Paper & pulp mills	115	2

Chart No. XII. (con.)

Manufacturing & Mechanical Industries, Occupational Distribution

Occupation	Males	Females
Printing & publishing	84	17
Rubber Factories	73	1
Shoe factories	41	5
Tanneries	297	
Turpentine distilleries	5	
Other factories	1,488	88
Skilled		
Loom fixers	12	
Machinists & mill wrights	13,327	1
Tool makers & dye setters	67	
Managers & supt. (factories)	3,148	48
Manufacturers	7,706	269
Officials	261	13
Gunsmiths, locksmiths	164	
Wheel wrights	79	
Other mechanics	990	1
Millers (grain, flour)	331	
Milliners, millinery dealers	202	4,053
Brass molders, casters, rounders	94	
Iron molders, casters, rounders	1,690	4
Other molders, casters, rounders	20	
Oilers of machinery	984	
Enamelers, lacquerers, japanners	22	5
Painters, glaziers, varnishers (Fact.)	1,501	4
Painters, glaziers, Varnishers (bldg.)	10,690	15
Paper hangers	463	4
Pattern & model makers	561	12
Plasterers	2,207	
Plumbers, gas & steam fitters	7,063	
Pressmen (printing)	819	
Rollers (metal)	48	
Roofers & slaters	284	
Sawyers	981	
Semi-Skilled Operatives		
Paint factories	63	5
Powder, cartridge & fireworks	252	38
Other chemical factories	231	89
Cigar & tobacco factories	1,153	211
Brick, tile & terra cotta	224	1
Glass factories	461	35
Lime, cement, gypsum	377	1
Marble & stone yards	198	1

Chart No. XII. (con.)

Manufacturing & Mechanical Industries, Occupational Distribution

Occupation	Males	Females
Potteries	134	5
Hat factories	107	40
Suit, Cloak, coat, overalls	431	219
Other clothing	308	269
Bakeries	113	167
Butter & cheese factories	405	22
Candy factories	619	477
Flour & grain mills	114	15
Fruit & vegetable canning	568	652
Slaughter & packing houses	361	97
Other food factories	847	110
Harness & saddle industry	785	16
Automobile factories	104	5
Blast furnaces & rolling mills	972	9
Car & railroad shops	1,250	7
Wagon & carriage factories	326	3
Other iron & steel workers	4,016	60
Brass mills	147	5
Clock & watch factories	38	1
Gold, silver & jewelry factories	107	42
Lead & zinc factories	8	1
Tinware & enamel ware	166	63
Other metal factories	126	3
Furniture, piano, organ factories	701	27
Saw & planing mills	3,481	26
Other wood working factories	542	341
Paper & pulp mills	134	13
Printing & publishing	803	679
Shoe factories	553	132
Tanneries	969	7
Textile Industries		
Beamers, warpers, slashers	1	2
Bobbin boys, doffers, carriers	28	8
Carders, combers, cappers	44	2
Drawers, rovers, twisters	8	11
Spinners	180	129
Weavers	334	10
Winders, reelers, spoolers	82	56
Other occupations	684	446

Chart No. XII. (con.)

Manufacturing & Mechanical Industries, Occupational Distribution

Occupation	Males	Females
Miscellaneous		
Electrical supply factories	113	25
Paper box factories	47	121
Rubber factories	123	9
Other factories	4,026	883
Sewers & sewing machine operators	472	1,994
Shoe makers & cobblers(outside)	2,619	11
Annealers & temperers,(metal)	24	
Piano & organ tuners	238	2
Wood carvers	86	4
Other skilled occupations	139	1
Stone cutters	879	1
Structural iron workers	618	
Tailors & tailoresses	4,960	1,434
Coppersmiths	180	
Tinsmiths	1,001	
Upholsterers	760	20

B. Agriculture

Charts No .XIII, No. XIV, No. XV, No. XVI, No. XVII and No. XVIII are derived from 1910 Census figures. It would be very desirable, if more recent data were available. The charts show the normal distribution as to occupation relative to specific vocation and sex. Combined with Chart No. XII, they show the relative distribution of the people of California in the various occupations, and serve as an aid in visualizing the vocational educational problems of California.

The data of the census shows 225,071 people engaged in the occupations listed under Agriculture, Forestry, and Fishing in California. Of this number 217,748 are men; 7,323 are women.

Chart No. XIII.

Agriculture,Forestry and Fishing

Occupation	Males	Females
Farm laborers(home farm)	10,971	1,097
Farm laborers(working out)	72,157	974
Dairy farm foremen	108	5
Farm foremen	1,864	57
Garden & greenhouse formen	70	
Orchard,nursery foremen	732	19
Fishermen & oyster men	3,789	13
Foresters	367	
Florists	334	61
Fruit growers & nurseymen	13,706	770

Chart No. XIII (con.)

Agriculture, Forestry and Fishing

Occupation	Males	Females
Landscape gardeners	302	1
Gardeners	3,311	80
Garden laborers	9,924	174
Greenhouse laborers	351	15
Orchard & nursery laborers	11,371	366
Lumber foremen & overseers	170	
Lumbermen & raftsmen	6,956	3
Teamsters & haulers	258	
Wood choppers & tie cutters	1,825	1
Owners & managers of lumber camps	149	3
Stock herders, drovers, feeders	4,809	32
Stock raisers	3,750	185
Apiarists	473	23
Corn shellers, hay balers, threshers	181	
Ditchers	278	
Poultry raisers & laborers	2,293	281
Not specified	640	5

C. Professional Service

The professional class of the state, according to latest available statistics includes 41,138 men and 28,315 women.

Chart No. XIV.

Professional Services

Occupation	Males	Females
Actors	919	796
Architects	1,203	32
Artists, sculptors, art teachers	1,062	1,110
Editors, reporters	1,631	267
Chemists, assayers, metallurgists	895	26
Mining Engineers	1,235	
Clergymen	3,135	45
College presidents & professors	547	227
Dentists	2,000	85
Designers	170	61
Draftsmen	1,405	46
Inventors	141	5
Lawyers, judges, justices	4,871	37
Musicians, music teachers	2,825	3,904
Photographers	1,328	294
Physicians& surgeons	5,179	852
Showmen	1,129	62
Teachers(athletics)	122	78
Teachers(school)	2,863	13,552
Trained nurses	454	4,406
Veterinary surgeons	400	
Other professional pursuits	511	388
Semi professional		
Abstractors, notaries	459	99
Fortune tellers, hypnotists	47	92
Healers	233	450
Keepers of charitable institutions	156	97
Lodge & society officials	422	124
Theatrical managers	547	17
Charity & religious workers	403	469
Other occupations	505	39

D. Trade and Transportation

The census shows 100,052 men and 4,241 women to be engaged in transportation and 177,095 men and 42,254 women in trade.

Chart No. XV.

Trade & Transportation (Trade)

Occupation	Males	Females
Agents	2,394	129
Canvassers	1,535	165
Collectors	1,734	57
Bookkeepers, cashiers, accountants	13,625	8,672
Shipping clerks	1,893	52
Other clerks	17,938	3,542
Bundle & cash boys & girls	287	357
Messengers, errand & office boys	2,338	77
Stenographers & typewriters	1,688	11,267
Bank & bank officials	1,665	57
Brokers & commission men	1,247	21
Loan brokers	85	10
Pawn brokers	46	1
Stock brokers	893	22
Other brokers & promoters	891	58
Clerks in stores	11,465	3,349
Commercial travelers	4,691	72
Decorators, drapers	304	48
Delivery men	8,467	4
Floor walkers	895	150
Foremen, warehouses, yards	152	2
Inspectors, gaugers, samplers	305	20
Insurance agents	2,782	115
Officials, insurance company	319	6
Laborers in coal yards	182	
Laborers in elevators	38	
Laborers in lumber yards	3,586	1
Laborers in stock yards	33	
Laborers in warehouses	403	4
Laborers in stores	3,028	109
Newsboys	1,256	7
Employment office keepers	194	41
Proprietors elevators	87	1
Proprietors warehouses	291	2
Other proprietors, managers	743	11
Real estate agents	9,779	433
Retail dealers	44,752	2,345
Auctioneers	115	
Demonstrators	61	98
Sales agents	1,117	105
Salesmen & saleswomen (stores)	28,254	9,043

Chart No. XV. (con.)

Trade & Transportation (Trade)

Occupation	Males	Females
Undertakers	641	40
Wholesale dealers, importers, exporters	2,137	37
Fruit graders & packers	1,666	1,573
Meat cutters	578	1
Other occupations	578	149

Trade & Transportation (Transportation)

Occupation	Males	Females
Boatmen, canal men	183	
Capt. masters, mates, pilots	2,386	
Longshoremen, stevedores	2,583	
Sailors & deck hands	7,450	2
Carriage & hack drivers	802	
Chauffeurs	2,300	1
Draymen, teamsters, expressmen	17,653	1
Foremen transfer co.	210	
Garage managers	406	1
Hostlers & stable men	3,125	
Livery stable managers	1,268	7
Proprietors transfer co.	814	8
Baggage men	364	
Freight agents	129	
Boiler washers, engine hostlers	288	
Brakemen	2,039	
Conductors (steam RR)	1,187	
Conductors (electric RR)	2,854	
Railroad foremen	2,109	
Laborers (steam RR)	18,403	67
Laborers (street RR)	987	8
Locomotive engineers	2,774	
Locomotive firemen	1,862	
Motormen	2,967	
Officials & Supt. (steam RR)	728	1
Officials (street RR)	90	
Switchmen, flagmen (steam RR)	1,967	2
Switchmen, flagmen (street RR)	73	
Yardmen (steam RR)	256	
Agents (express co)	213	6

Chart No. XV. (con.)

Trade & Transportation (Transportation)

Occupation	Males	Females
Ticket & station agents	636	52
Express messengers	255	
Railroad mail clerks	470	
Mail carriers	1,825	25
Telegraph & Telephone men	1,517	
Telegraph messengers	327	2
Telegraph operators	1,690	442
Telephone operators	291	3,520
Laborers, road building	8,654	
Laborers, street cleaning	277	
Laborers, other transportation	1,434	6
Foremen, street building	327	
Foremen, telegraph, telephone co.	154	17
Water transportation	137	
Other transportation	36	
Inspectors(steam RR)	755	4
Inspectors(street RR)	124	
Other transportation	100	11
Officials, mgrs. telephone, telegraph.	231	41
Officials, Mgrs. other transportation.	1,292	

E. Domestic and Personal Service

Domestic and personal service includes 78,062 men and 62,090 women in California.

Chart No. XVI.

Domestic & Personal Service

Occupation	Males	Females
Barbers, hairdressers, manicurists	7,098	1,518
Billiard & pool room keepers	581	3
Dance hall, skating rink keepers	103	14
Boarding & lodging house keepers	1,974	6,608
Bootblacks	945	
Charwomen & cleaners	891	381
Elevator tenders	845	1
Hotal managers	2,756	824
Housekeepers & stewards	1,381	5,873
Janitors & sextons	3,683	544
Laborers (domestic)	2,015	87
Launderers, laundresses (homes)	461	3,821
Laundry operators	6,159	4,200
Laundry owners & operators	1,173	109
Midwives		114
Nurses (not trained)	665	5,639
Porters	2,947	2
Restaurant keepers	2,811	478
Bell boys	704	18
Chamber maids	24	1,143
Coachmen, footmen	409	
Cooks	5,792	6,398
Other servants	5,967	19,645
Waiters	7,333	4,373
Bath house attendants	179	60
Cemetery keepers	139	2
Cleaners & renovators (clothing)	582	133
Umbrella menders & scissor grinders	41	1
Other occupations	120	7

F. Public Service

The California public employs 23,923 men and 553 women.

Chart No. XVII.

Public Service

Occupation	Males	Females
Firemen(Fire department)	1,824	
Guards,watchmen,doorkeepers	2,711	2
Garbage men,scavengers	583	
Other public laborers	1,812	21
Detectives	234	5
Probation,truant officers	23	5
Marshals,comstables	421	
Sheriffs	414	
City officials & inspectors	1,315	50
County officials & inspectors	829	88
State officials & inspectors	226	6
U.S.officials & inspectors	1,643	357
Policemen	2,046	
Soldiers,sailors,marines	9,569	
Life savers	72	
Light house keepers	97	6
Other occupations	239	13

G. Mining

In California 31,254 men and 44 women are engaged in mining.

Chart No. XVIII.

Mining

Occupation	Males	Females
Foremen & overseers	781	
Inspectors	17	
Managers	984	2
Officials	151	3
Operators	1,166	14
Coal mine operatives	289	
Copper mine operatives	1,385	
Gold & silver operatives	15,814	13
Iron operatives	18	
Lead & zinc operatives	80	
All other mine operatives	3,081	2
Quarry operatives	2,589	
Oil & gas well operatives	4,663	7
Salt well & work operatives	236	3

V. Future California Evening High Schools

A. The Need for Vocational Work

A study of the work of the California evening high schools impresses upon us the need for vocational instruction. Enrollments in classes show conclusively that the demand is strongly for vocational work. The facts brought out in charts No. IX and X illustrate this forcibly. A large majority of the fifty courses listed in Chart No. X which shows the courses having largest enrollments in twenty three evening high schools, are typically vocational in nature.

While the Americanization work is an important feature of the evening school work, statistics from actual 1919-20 enrollments show only 628 people enrolled in the Naturalization classes of the twenty three schools from which complete enrollments were obtained. Twelve other courses prove to be more largely attended than the citizenship work, five having enrollments of from one thousand to two thousand each.

It is also true that quite a large number of individuals attend evening school for individual improvement along cultural lines. When totaled up in actual numbers, however,

this group appears very small in comparison with the thousands that are definitely trying to improve themselves along some definite vocational lines.

The need of the future in vocational education does not imply so much of addition of new courses to the curriculum as it does of change in the type of presentation of the subjects now listed in our courses of study. Vocational training means definite training. Vocational instruction means the teaching of a specific vocation, rather than teaching about it. This type of instruction necessarily requires of the instructor a practical knowledge and experience in the occupation taught as well as a knowledge of the theory.

It would seem that, in so far as our schools have fallen short of the greatest possible service, they have erred in not giving training of a sufficiently definite type for a specific utility in a given field. The evening high schools of the future may assist in remedying this weakness by providing instruction by teachers trained in the practical as well as theoretical school. They may well consider the predominating demand for vocational courses when they are planning their courses of study; and provide an opportunity for those who desire to continue their education along lines that supplement their daily experiences.

The vocational work in our evening high schools is no fad. It is here to stay. A definite opportunity is given to serve the community in offering facilities to learn to those who earn.

B. Opportunities for Vocational Industrial Education

The following is a list of suggestive courses that have been conducted with success in various evening high schools with the aim of giving definite vocational training for industry.

Angle Measurements
Auto Repair
Auto Practice
Auto Electricity
Architectural Drafting
Acetylene Welding
Brazing
Basketry
Concrete Construction
Chemistry (industrial)
Cabinet making
Dressmaking
Design(Millinery)
Drawing(mechanical)
Electric Shop
Forge
Interior Decorating
Journalism
Linotype
Millinery
Mechanics(Strength of Materials)
Machine Shop
Machine Design
Oil Analysis
Press Work
Printing
Pattern Making
Plumbing
Shop Mathematics
Ship Fitting
Sheet Metal Work
Steam & Gas Engineering
Vulcanizing

It is unwise to state that certain courses should be included in all future evening high schools. Local conditions must be the determining factor in the choice of subjects. The preceding list is offered as suggestive of

possible courses that are adapted to school vocational instruction. From this list a desirable vocational industrial program might be selected to meet the needs of the individual community.

It is true that some industrial courses are of such general interest as to be equally applicable to almost all communities. A special study has been made as to the minimum equipment necessary to conduct classes in these courses. These lists have been derived from conferences with experienced instructors and supervisors in the various subjects listed.

Automobile Courses (Minimum equipment for class of 20)

2 complete auto chassis
2 complete engines mounted on stands with water & exhaust connections
1 engine, cut open to show internal parts
2 cut open carburetors
4 jacks
1 valve reseating set
2 valve grinders
2 valve spring releasers
2 sets bearing scrapers
1 grease gun
1 pump
1 tire repair kit
2 socket wrench sets
1 tire gage
1 hydrometer for storage battery
1 wheel puller
2 work benches equipped with 2 vices each
1 set each of S.A.E. and U.S. stock & dies
1 distillate wash tank
1 tube testing tank
Miscellaneous items such as wrenches, pliers, screwdrivers, hammers, files, blowtorch and soldering iron, are also necessary. For the vulcanizing work the equipment costs approximately $700.00

Electricity (Class of 20)

Vocational instruction in electricity is of two principal types, auto electricity and ignition and electric wiring etc.

A suggestive list of minimum equipment for these courses follow.

The equipment is planned for a class of 20.

2 complete starting & lighting equipments
1 charging set
2 storage batteries
2 magnetos
2 high tension coils
2 timers & distributors
2 test benches, equipped switchboards
volt meters
ammeters
rheostat
1 set wiring diagrams
2 doz. 6 volt bulbs
1 doz. dash type switches
wire
tape
armatures
meters

It is sometimes possible to borrow motors and other materials for demonstration purposes. For the auto repair work many schools are kept supplied with privately owned cars that are brought in from outside for repair. In some instances a slight charge is made, while in other schools the length of time required for the class to complete the job with the maximum of instructional benefit is thought to entitle the owner to free service.

Machine Shop (Class of 20)

10 standard engine lathes
1 milling machine
2 drill presses (1 sensitive hand feed- 1 power feed)
1 shaper
1 universal tool grinder
2 emery wheel stands
1 arbor press
1 speed lathe

6 vices
1 power hack saw
benches
small tools

Forge (Class of 20)

20 hand forges
20 anvils
20 tool kits
  Each kit should include at least
    4 pr. tongs
    1 flatter
    1 hand hammer
    1 hot chisel
    1 cold chisel

Acetylene Welding (Class of 12)

3 cutting torches
6 welding torches
3 stands
gas tanks- 500 to 600 pounds pressure
Prestolite gages

Cabinet Making & Wood Work (Class of 20)

1 small surfacer
1 band saw
1 rip-cut off saw
1 sander
1 jointer
1 motice machine
1 gluing & drying outfit, clamps, etc.
1 wood turning lathe
20 individual benches
20 7/8" chisels
20 3/8" chisels
20 mallets
20 jack planes
20 scrapers
20 marking gauges

Pattern Making (Class of 20)

10 wood turning lathes
4 sizes face plates for each lathe, chucks, etc.
20 complete sets wood working tools

Mechanical Drawing & Architectural Drafting (Class of 20)

20 drafting tables or benches
20 individual lockers for drawing boards, T squares etc.
1 cabinet for models and objects for drawing (a miscellaneous supply of geometric models, small castings, machine parts, machine bolts, screws, bearings, valves, monkey wrench etc.)
1 filing cabinet for drawings
20 individual sets of drawing equipment (usually furnished by student)

Each set should include
- 1-12" architect's scale
- 1-30" T square
- 1-8" 45 degree triangle (celluloid)
- 1-10" 60 degree triangle (celluloid)
- 1 bottle black waterproof ink
- 1 bottle red waterproof ink
- 2-4 H drawing pencils
- 1 pen holder
- 1 doz. pen points (including Gillott #404, Falcon #97, Ball pointed)
- 1 doz. thumb tacks
- 1 eraser
- 1 cleaning eraser
- cream detail paper
- 1 case drafting instruments should include:
  - 1 ruling pen
  - 1 pen and pencil compass
  - 1 pair dividers
  - 1 bow dividers
  - 1 bow pen
  - 1 bow pencil

Printing (Class of 10)

Presswork, Machine and Hand Composition

A large room, with sink, sanitary towels, and hooks for clothing
A half-medium Colts Armory press
1 eighth-medium Chandler and Price press
1 C.&.P. 22-inch paper cutter
1 stapling machine
10 type stands
3 imposing stones
1 linotype machine
2 large tables

2 motors for presses
1 ink cabinet & slab for mixing ink
stock shelves
2 drying racks
1 font of one point face brass rule
1 light font of brass rule
20 California job cases

The job cases should contain Cheltenham or other italic, bold, outline, and larger upto 72 point of the face selected, a good text letter, and invitation shaded letter in ten, twelve, fourteen and eighteen point.

1 lead cutter
1 mitreing machine
1 set of metal furniture, wood furniture and reglets.

There should be provided also approximately one hundred pounds of strip lead and slugs, monotype rule, and a liberal supply of stocks, galleys, tweezers, and composing rules. The above equipment would cost approximately $6,600. The cost of a linotype machine would be about $4,200, the remaining equipment totaling about $2,400.

Tailoring & Dressmaking (Class of 20)

4 sewing machines
5 large tables
1 cutting table
1 ironing board
1 electric iron
1 fitting stand
1 sleeve board
1 screen
10 dress forms
3 prs. scissors
12 yard sticks
24 chairs
1 large mirror
1 hand mirror

In addition to the above, there are several miscellaneous articles of equipment such as tailor's chalk, pins, needles, thread, lockers, and a storage cupboard.

In all vocational courses in industrial work the most important factor as to success is the personal qualifications of the instructor. The first requisite is a thorough practical as well as theoretical knowledge of the subject. A background of successful experience is essential to this type of instruction. In addition to these qualifications, the usual qualities of interest in the work, personal interest in the students, and strong personality are desirable. A thorough basic education is desirable in addition to technical knowledge.

C. Opportunities for Vocational Agricultural Education

Some courses that might be offered as definite training for agricultural employment are:

Deciduous Crops
Gardening
Farm Accounting
Farm Management
Poultry
Rabbits
Dairying
Stock Judging

The equipment necessary for vocational work in Agriculture is very limited. The usual Agricultural and general science laboratory equipment might be utilized in some cases

Experiment plots are of value, if properly used. The important factor here is the instructor.

Usually the evening class in Vocational Agriculture is composed of those employed in that vocation during the day. The value of the courses depends, then, on the skill with which the instructor correlates his instruction with their daily work. Here is an apparent opportunity for project work in Agriculture. The instructor could plan with the student the project to be carried on. The evening sessions could be utilized in checking up results, solving problems and difficulties arising from the project, and imparting supplementary information.

The important thing here again is the thorough and practical knowledge of the instructor. In addition to the usual collegiate preparation of an Agricultural college, he should possess several years of practical experience in Agriculture.

D. Opportunities for Vocational Home Making Courses

Courses which might well be offered in real home making are suggested as follows:

Cooking & Serving
Dietetics
Dressmaking

Household Management (Buying etc.)
Interior Decoration
Home Care of the Sick
First Aid
Course for Prospective Mothers
Millinery

For the textile courses the equipment would be the same as listed in Part V-B. For the food preparation courses the following list might serve for a class of twenty:

Food Preparation
1 large range or oven
10 gas plates
2 sinks
6 small wash boards
2 table cloths
12 napkins
1 lunch cloth
1 set doilies
6 doz. dish towels and cloths
10 dish mops
4 large knives
6 chopping bowls and knives
4 food choppers
6 baking pans
2 roasters
2 steamers
6 can openers
2 cork screws
1 bread mixer
1 ice cream freezer
2 funnels
1 coffee pot
1 tea pot
6 extra mixing bowls
1 carving set
2 sink strainers
2 sop dishes

5 lemon extractors
3 frying baskets
10 graters
1 hamper
table & desk room for twenty
lockers
storage cupboards
cooler closet
refrigerator
towel racks
scales
tea kettle
dining table
china
silver
glass

Individual Desk Equipment (twenty)

1 case knife
1 paring knife
1 fork
1 utensil pan
1 pie pan
1 small baking pan
1 muffin pan
1 plate
1 cup and saucer
2 measuring cups
1 double boiler
1 sauce pan
1 mixing bowl
1 spatula
2 tea spoons
1 table spoon
1 wooden mixing spoon
1 dish pan
1 salt shaker
1 pepper shaker
1 egg beater
1 custard cup
1 strainer
1 biscuit cutter
1 asbestos mat
1 frying pan
1 soap dish
1 rolling pin

In this course, as in the work in Agriculture, the important factor is the personality, practical experience, and common sense of the instructor. It is evident that, other qualifications being equal, a married lady who had practical home making experience would be preferred. The dressmaking and millinery work should be of a type to be of actual benefit in making over clothing, re-trimming hats, etc., as well as making new articles.

The work in nursing, health and allied work should be given by one with both nursing and home experience. One just criticism of many past endeavors along this line of instruction, is that the instruction has been too strongly theoretical; and often the instruction has been given by a young,unmarried lady whose preparation has been almost exclusively university laboratory work, and theoretical in nature.

E. Opportunities for Vocational Commercial Courses

Some of the vocational courses in commercial work which are adapted to evening school work are as follows:

Answering telephone
Advertising
Accounting
Bookkeeping
Banking

Business Law
Business English
Business Arithmetic
Commercial Correspondence
Commercial Art
Dictation
Office Appliances
Penmanship
Spelling
Stenotypy
Salesmanship
Shorthand
Typing
Telegraphy

In the following list is suggested only what are considered to be the minimum essentials in the way of equipment for the most practical of the above courses:

Commercial Equipment (Class of 20)

20 typewriters
2 mimeographs
2 Burroughs adding machines
20 tables for bookkeeping
1 bookkeeping machine
telephone
telegraph sounders and batteries, wire, etc.

In addition to having a knowledge of the subject, and the usual qualifications of a teacher, it is desirable that the instructor have a first-hand knowledge of actual business practices, and conditions.

VI. The Problem Applied to a Specific Community

A. The City of Richmond, California

In considering the educational needs of any community, the fundamental factor to merit attention is the city itself. A critical study of the location with regard to commercial and industrial advantages, the history of growth, the character of the people with special attention to nativity and dominant interests, the present state of industrial and civic development, and the probable future development are some of the essential facts to be ascertained before a study of educational opportunities can be intelligently made.

It has become apparent to thinking educators that a school system, in order to function properly, must be adapted to local conditions and seek to meet local needs. This principle has been recognized by the Federal Board for Vocational Education in administering the Smith-Hughes Act. The Board has laid down certain fundamental regulations and have defined clearly the purpose of the act; but have left the details of administration and subject matter to the various states and local communities.

1. Richmond's Location

Contra Costa County, California, in which the city of Richmond is situated, is unusually favored in its location. Enjoying the temperate climate of the central California coast, Contra Costa County is situated almost directly across the bay from the Golden Gate, surrounded on two sides by the two lobes of San Francisco Bay, and with its eastern district open to the Sacramento and San Joaquin valleys and to the eastern states. From the delta lands on the east to the San Pablo section on the west one finds thousands of acres of rich soil capable of tremendous production of the wide variety of crops suited to this region. The Sacramento River, which runs along the northern border, offers many desirable locations for various factories and refineries because of the splendid shipping facilities. This section, from Antioch to Richmond, has already enjoyed a marked industrial growth. Many factories, refineries, and plants of several kinds are located along this industrial belt; and many desirable industrial sites remain as yet undeveloped.

Both the manufacturing concerns and the farms enjoy excellent transportation facilities. The Southern Pacific and Santa Fe steam railroads traverse the country; and the San Francisco and Sacramento electric railway connects Oakland and Sacramento, traversing the farming section and

making contact with the manufacturing area at Antioch and Pittsburg. Ocean liners are now able to touch at Richmond, Crockett, Oleum, Porta Costa and Martinez; and present dredging plans provide for like service for Pittsburg and Bay Point in the near future.

An interesting indication of the rapid growth of the county is afforded by the figures on the assessed valuation of property of the county for the past two years.

Chart No. XIX.

Year	Valuation	Gain
1918	$ 56,137,785	
1919	62,317,785	$ 6,180,000

The major portion of this gain was made in new property developed in the county.

2. The City's Origin and Growth

Richmond, the largest city in the county, is of very recent development. Its entire growth has occurred since 1900. In 1899 the present location of the city was open farm and grazing land. Today the city is a thriving industrial and shipping center, with a population of more than 23,000 people. The site of the present city was already located on the main line of the Southern Pacific,Ogden and

Shasta Routes when the Santa Fe line selected Richmond as the site for the western terminal for their transcontinental line. They began construction in 1899, and traffic was first opened by way of the ferry slip to San Francisco in 1901.

The second great impetus to development was furnished by the Standard Oil Company when they established their large refineries there in 1902. In 1906 Richmond was first incorporated as a city of the sixth class; and has since enjoyed such a rapid growth that indications point toward eligibility to the 25,000 class before the close of the year 1920. Excellent harbor facilities for deep water craft, a large area of level land suitable for factories, and a strategic position as the natural gateway between the eastern states and the Orient have made the remarkable growth of the city possible.

The rapid growth of Richmond is indicated by the following chart of the population figures for the city for the years 1903 to 1916 and the year 1919. These figures were obtained from census returns and, for odd years, by estimation upon the basis of the school census and number of registered voters.

Chart No. XX.

Year	Population	Difference	Per Cent
1903	2,300		
1904	2,900	600	25
1905	4,200	1,300	45
1906	5,100	900	21
1907	6,300	1,200	24
1908	7,000	1,700	14
1909	7,060	60	1
1910	6,802	- 258	- 3
1911	8,400	1,598	23.5
1912	11,480	3,080	36.7
1913	13,300	1,820	16
1914	15,300	2,000	15
1915	17,600	2,300	15
1916	20,800	3,200	19
1919	23,000	2,200	15
1920	?		

The foregoing table indicates a yearly increase varying in per cent from -3 to 45. Two periods of retarded growth are evident. The only period of negative change followed the financial crisis of 1907 and 1908. The World's Fair at San Francisco caused a boom which was retarded during the recent war. The coming of peace and the restoration of normal trade relations plus the growing commerce by way of the Panama Canal would seem to indicate a probable continuance of the rapid rate of growth of the past.

3. Reasons for Growth

(a) Natural Advantages

The chief natural advantage that Richmond enjoys is

the opportunity afforded for the construction of wharves and piers reaching out into deep water close to the natural shore line. Richmond has deep water closer to the shore line than any other port on the east side of San Francisco Bay. The excellent deep water facilities for harbor development are shown by the following chart:

Chart No. XXI.

Location	Distance from Shore at Low Water to Depth of					
	10'	15'	20'	25'	30'	35' ('=ft.)
Pt. Richmond.....		150'	1,660'	8,150'	8,500'	9,000'
Standard Oil....	500	2,600	3,000	4,300	4,600	5,000
Pt. Castro......	150	250	420	2,200	2,400	2,500
Molate Point....	250	330	420	660	1,670	2,100
Pt. San Pablo....	50	75	100	125	150	250

Richmond's position with reference to the Golden Gate is more favorable for harbor developments than any other east-bay city. The distance to harbor points in San Francisco Bay from the entrance at the Golden Gate are as follows:

Point Richmond......................	7½ miles
Outer edge of Oakland's outer harbor...	8½ miles
Hunter's point, near southern end of San Francisco water front...	8¾ miles
Inner end of Oakland Harbor Training Wall......	9½ miles
Easterly end of Oakland's inner harbor.	12¾ miles
Point San Pablo, extreme north end of Richmond water front....	10¼ miles

Two main channels lead from the entrance of San Francisco Bay to Richmond. The southern channel leads from

Richmond through the central deep portion of the bay to the San Francisco water front and Oakland harbor. The northern channel runs north of Angel Island, the immigration port of entry, and up the bay through the straits opposite Point San Pablo. Either of these two routes give direct deep water access to the Golden Gate. For the purpose of safety there are two light houses along the Richmond water front. One of these, known as "The Brothers' Light House", is located upon a small island about one fourth mile off shore at Point San Pablo. The other is at the southern end of Southhampton Shoal.

The Richmond water front is divided naturally into three portions. The least valuable of these parts lies north of the city and east of San Pablo Bay, being known as the San Pablo Bay Frontage. It consists largely of shallow water. Of the other two frontages, the one that is now in the most advanced stage of development is the Outer Harbor Frontage. This frontage lies west of the city at the base of the Potrero Hills between Point Potrero on the south and Point San Pablo on the north. It is on this frontage that the large municipal wharf and most of the private piers are located. The Inner Harbor Frontage comprises a shallow basin on the south extending up to a point near the heart of the business section of the city. The total actual shore line

of the three combined frontages at mean low tide is eighteen miles, affording many desirable locations for wharves.

The city limits of Richmond include a large area, having a diversified topography. Beginning with the extreme western portion of the city, we find a narrow range of steep hills upon which is located the old town of Point Richmond which is now a part of the city of Richmond. The municipal wharf is on the western side of these hills connected to the city proper by a municipal tunnel which is seven hundred twenty five feet long, thirty five feet wide and twenty two feet six inches high from floor line to roof. The tunnel is constructed principally of concrete material, and is capable of accommodating one railway track, and two streams of vehicles, in addition to a five foot sidewalk which is elevated four feet above other traffic, and has an iron hand rail on the outside of the walk for safety of pedestrians. On the eastern side of the hills is a low, flat area which borders on the proposed Inner Harbor. In addition to the marshy land in this central portion, there is a large area especially suited to the location of factories. Back of this lower section the land slopes up gradually to the foothills. This eastern section is developing most rapidly at present, the lower portion of this section furnishing the sites for most of the business and manufacturing establish-

ments while the higher portion extending up the eastern foothills is becoming the choice residential district of the city.

At Point Castro and Molate are outcroppings of a grade of sandstone which has been profitably quarried. It is used for concrete aggregate, road metal and rock fills. The city limits of Richmond, then, include an unusual topography. Beginning with the foothills on the east, the city extends down gentle slopes to the low marshy land, which in turn, connects with the steep Potrero Hills, and reaches quite a distance out into the waters of the bay. The city includes within its limits a total of 17,484 acres, of which 4,985 acres is deep water, 3,923 tide lands, and 8,576 acres land area.

A further natural advantage of Richmond is its situation relative to the fertile valleys of the Sacramento and San Joaquin rivers. The commerce of this district naturally passes through the city as the site is on the south side of the bay where the Sacramento empties. Because all the large cities lie to the south and west, the traffic naturally comes through Richmond. This district is also the gateway to the transcontinental traffic. The city is unusually fortunate in natural advantages, then, with its proximity and accessability to the Golden Gate and the Orient on the west, and the

rich valleys and eastern states on the east, with its deep harbors, level factory sites, and desirable residence sections.

(b) Favorable Developments

Because of the desirable natural qualifications of Richmond, many developments have takne place since the birth of the city in 1900, and its incorporation in 1905. Chief among the developments which have accelerated the growth of the city is the choice of this site in 1899 as the western terminal of the Santa Fe Railroad. The railroads shops, the Santa Fe tunnel, and the ferry slip from Point Richmond to San Francisco were vital factors in the early life of the city. In 1902 the Standard Oil Company located a large refinery here. These refineries are employing approximately 3,500 men at present; and are now commencing a huge addition to the present plant. The Ogden and Shasta Routes of the main line of the Southern Pacific Railroad cutting the heart of the city, have been instrumental in the growth of the city as has also the location of the western branch of the Pullman Shops. Further railway facilities are provided by a branch of the Santa Fe Railroad connecting Richmond with Oakland; and by the Richmond Belt Railway and the East Shore and Suburban Electric Railway.

The city enjoys the benefits of an electric system which connects all the cities of the east bay region by a very complete railway system.

As has been before mentioned, the greatest natural asset that Richmond has is the water front with its many desirable sites for wharves. The development of the city has been materially hastened by the enterprise of many private concerns, as well as the recent community interest resulting in the large municipal wharf. The list of wharves along Richmond's water front follows:

Chart No. XXII.

Owner	Name & Location	Depth of water at lowtide
City of Richmond	Municipal Wharf at Point Richmond	30'
Los Angeles Pressed Brick Co.	Brick works east of Point Richmond	5'
Santa Fe RR Co.	Point Richmond	24'
San Francisco Quarries Co.	Point Castro	24'
Healy-Tibbitts Construction Co.	Molate Point Quarry Wharf	18'
Richmond Belt Railway	Point San Pablo Wharf	30'
Cal. Wine Assn.	Winehaven	24'
Standard Oil Co.	Scofield Ave. Wharf	25'
Standard Oil Co.	Point Orient Wharf	30'

Considerable credit is due the enterprising people of Richmond for the construction of one of the best municipal wharves on the western coast and the tunnel which

connects it with the city proper. The wharves of the Richmond Belt Railway and the Santa Fe Railway have been used for commercial purposes, loading and unloading merchandise carried over their lines. Excepting the municipal wharf, the other wharves are used solely by the owning corporations.

In considering those developments that have added impetus to Richmond's growth, one must include one vital factor outside the city limits which has, in the past, accelerated its marked growth. This factor, which will no doubt exert a still more noticeable influence in the future, is the proximity to the larger population centers of the Bay Region. As the available lands for factory sites and homes in San Francisco, Oakland, Alameda and Berkeley decrease, the growth of Richmond with its desirable natural advantages heretofore mentioned is certain to be accelerated.

4. The Present State of Development

(a) Industrial and Commercial

Due to the favorable conditions for development, which are apparent to ordinary observers, and to the proximity to large interests in the near-by cities, the industrial and commercial growth in Richmond has been rapid. The Richmond Board of Trade and the Richmond Industrial

Commission are two aggressive bodies that have taken an active part in the promotion of its industrial and commercial growth.

Due largely to this promotion interest the city has been provided with all the usual conveniences and services that one finds in cities many times larger. This development foresight has provided the city with miles of cement sidewalks, and miles of paved streets, sewers, street cars, etc. far ahead of the immediate need. The greater part of the city is furnished with its water supply by the People's Water Company, the supply coming from artesian wells in the San Pablo district. The Pacific Gas and Electric Company furnishes most of the heat and light. The Pacific Telephone and Telegraph Company provides direct communication with all the bay cities. Other public service corporations are the Postal and Western Union Telegraph Companies, American District Messenger Service, Western States Gas and Electric Company, East Bay Water Company and the Oakland Gas, Light and Heat Company. The city enjoys excellent electric railway and ferry service, being an integral part of the bay system.

Richmond has profited by unusual news and publicity service, having had three dailies, The Richmond Daily News, Morning Independent, and the Evening Record-Herald; three weeklies, The Terminal, the Unionist, and the Contra Costan;

and one monthly, The Advance.

The Bank of Richmond, Mechanics Bank, Richmond Savings Bank and First National Bank provide satisfactory banking facilities. Richmond has seven modern office buildings in addition to a fair section of business buildings of the ordinary type. The city has several theaters and one well-equipped opera house.

Some of the leading industrial concerns of the city are:

- Berkeley Steel Company
- California Cap Works
- California Chair Company
- California Paving Block Company
- California Vigorite Company
- California Wine Association
- Central Brick Company
- Dupont Powder Company
- Enterprise Lumber Company
- Great Western Brick Company
- Guaranteed Products Company
- Golden Gate Creamery
- Jones-Slattery Planing Mill
- Judson Powder Company
- Local Railway Systems
- Los Angeles Pressed Brick Company
- Metropolitan Match Company
- Pacific Porcelain Ware Company
- Pacific Sanitary Manufacturing Company
- Pioneer Electric Company
- Prest-O-Lite Company
- Princeton Knitting Mills
- Pullman Car Shops
- Rock Quarries (Six Companies)
  - San Pablo Quarries Company
  - Healy-Tibbitts Company
  - John Nichols Company
  - Hutchinson Company
  - Stege Crushed Rock Company
  - Continental Fireproof Company

Richmond Brick Company
Richmond Furniture Company
Richmond Brewing and Malt Company
Richmond Machine and Iron Works
Richmond Pottery Company
Richmond Lumber Company
Richmond Dredging Company
Santa Fe Railroad Terminal Shops
Stauffer Chemical Company
Shaw-Harrison Gas Engine Company
Tilden and Eakle Lumber Company
Union Sulphur Phosphate Company
U.S.Briquette Company
Western Pipe and Steel Company
Standard Oil Company Refineries

A majority of the industrial concerns of the city employ union laborers. Most of the concerns have made a practice of paying satisfactory wages with the result that the city has enjoyed almost uninterrupted harmony between labor and employers. This condition has naturally reacted favorably upon the industrial and commercial development of thecity.

(b) Civic

The city of Richmond was first incorporated in 1905 as a city of the sixth class. In March 1909 the classification was changed to the fifth class. The present indications are that the 1920 census will entitle the city to be included in the 25,000 classification. The city charter provides for a desirable form of city government in which the people retain controlling power. The council members and members

of the Board of Education are elected by popular vote. The municipality also has the right of recall, initiative and referendum guaranteed to its citizens in the city charter.

The city has twelve churches, a modern fully-equipped hospital together with a sanitorium, seven graded schools and a union high school. There are approximately forty miles of asphalt and macadam streets in the city; and forty three and one half miles of sewers. The city maintains Janice Park as a municipal park. The most pretentious municipal work done by the city is the recent construction of the municipal tunnel to the municipal dock off Point Richmond. These two projects have cost the city an immense sum of money. The cost of the dock to date is approximately $1,000,000. At the present time a further bond issue of $400,000 for additional improvements is contemplated. The business and industrial development of the city are efficiently protected by adequate police and fire departments.

Some of the live organizations of the city which have a vital influence upon the civic welfare are the Richmond Civic Council, Richmond Chamber of Commerce, Building Trades Council, Richmond Board of Trade, Richmond Industrial Commission, Richmond Community Welfare Association, Y.M.C.A. and Y.W.C.A., Minute Girls, Boys Junior Police, Boy and Girl Scouts, Parent-Teachers Association, and various fraternal

organizations and womens' clubs.

5. The People

Richmond is a typical cosmopolitan American city. Nothing in the way of control by descendants of any foreign nation is to be found here. It is true that there are many of foreign descent in the city, one school reporting that in 1919 25% of the pupils were of Italian parentage; but there is no effort on the part of any foreign element to segregate or exert un-American influences. A very large majority of the citizens are laboring people, there being practically no "idle rich" residents in the city. While there is a percentage of the Mongolian race, the majority of the people come from sturdy Scotch, English and Irish parentage. The people, as a whole, belong to the aggressive type of superior quality of skilled laborers, the type of work pursued in most of the industrial concerns requiring a high type of skilled workmanship. This is especially true in such concerns as the Pullman Car Shops, Pacific Porcelain Ware, and the Santa Fe Railroad Shops. That the city is typically industrial, and that the people are primarily industrial producers is appreciated by a glance at the preceding list of some of the principal industrial concerns.

The number of employees engaged in some of the leading industries of the city follow in Chart No. XXIII. It is possible for the author to furnish these figures through the courtesy of a committee of the Building Trades Council by whom the estimate was made from their close acquaintaince with local labor conditions.

Chart No. XXIII.

Name of Plant or Employer	Number of Tradesmen
Fire Department	36
Standard Oil Refineries	3,500
Pullman Car Shops	500
Police Department	18
Princeton Knitting Mills	20
Retail Stores, etc.	600
Brickyards	65
Santa Fe Shops	500
Western Pipe & Steel Co.	257
California Wine Assn.	200
Pacific Sanitary Mfg. Co.	200
Pacific Porcelain Ware Co.	150
Construction Companies (carpenters)	580
Guaranteed Products Co.	380

Other industrial concerns employ a proportionate number.

A more accurate idea of the large percentage of the population engaged in productive employment of the skilled trade type is secured from a study of Chart No. XXIV, which accurate figures we are able to present through the courtesy of the Building Trades Council. This chart summarizes the number of members of the various labor unions of Richmond by trades.

Chart No. XXIV.

Trade	Number of Members
Barbers	42
Boilermakers	300
Butchers	50
Blacksmiths	50
Bricklayers	50
Carpenters	580
R.R.Carmen, suburban	50
Carmen	320
Electrical Workers	50
Railroad clerks	200
Hod carriers	50
Firemen	36
Laundry workers	90
Lathers	10
Machinists	400
Teamsters	100
Oil & Gas workers	370
Painters	50
Plasterers	15
Plumbers	15
Potters	100
Retail clerks	70
Steam fitters	280
Moulders	80
Typographical workers	10
Railroad Trainmen Brotherhood	400
Long Shoremen	200
Common Laborers	100

As indicated by Chart No. XXIV, a large majority of the workers belong to labor unions. The city as a whole is very strong in its loyalty to the interests of labor. There are a few exceptions to therule of the employees of most concerns being members of the unions, notably the Standard Oil Refineries employing approximately 3,500 of whom only about 370 are affiliated with labor unions. By combining the information of Chart No. XXIII and that of Chart

No. XXIV, it is possible to derive a correct conception of the people of Richmond. They are essentially active, productive industrial workers in skilled trades. The professional class is very small, while there is a normal proportion engaged in business.

6. The City's Probable Future

Few cities of the United States have a more certain prospect of rapid growth and development. With its natural advantages heretofore described coupled with its virile, aggressive citizenship, the present industries seem certain to prosper, and other enterprises attracted to the city. At the present time the Standard Oil Company is making a huge addition to their already enormous refineries there. This addition which is costing $8,000,000 will place this concern as one of the two largest in the oil industry. Three other new concerns have secured building permits for plant construction this year. Every indication points to the resumption of the city's rapid growth now that normal industrial conditions again exist. In addition to the refineries, which already has a daily capacity of 60,000 barrels for crude oil, there are thirty one other manufacturing plants in the city. And yet the ambition of Richmond is not

satisfied. Congress has appropriated $428,000 toward the inner harbor, and the people of Richmond hope to soon see it completed. This inner harbor development will not only provide deep water shipping up to the business section, but will also drain a large area of land by means of the necessary dredging that will become excellent factory sites.

There are also factors of a different nature that point to rapid growth for this city. One of these is a comparatively low cost of living. Authentic data on this phase of the situation is furnished by the United States Bureau of Labor Statistics in the Monthly Labor Review for December, 1919. In Chart No. XXV we will present statistics on the retail cost of twenty two food articles for an average family for fifteen of the representative cities of the various sections of the United States. For the purposes of comparison the costs in San Francisco are indicative of those of Richmond, since common prices prevail and San Francisco markets and stores are patronized by Richmond residents when desirable.

Chart No. XXV.

City	Average Family Expenditures for 22 Food Articles		
	1913	1918	1919
Atlanta	$ 361.00	$ 658.44	$ 680.22
Chicago	336.48	591.85	637.74
Dallas	395.41	694.38	716.30

Chart No. XXV. (con.)

City	Average Family Expenditures for 22 Food Articles		
	1913	1918	1919
Denver	$ 247.36	$ 438.35	$ 452.35
Kansas City(Mo.)	340.12	615.91	647.28
Louisville	363.85	672.29	687.50
Minneapolis	319.98	564.45	614.70
New Orleans	369.29	685.53	703.62
New York	355.36	647.23	665.95
Omaha	334.52	608.32	653.20
Pittsburg	350.35	634.65	667.06
Providence	380.85	710.79	739.95
Seattle	265.35	469.08	484.99
San Francisco(Richmond)	271.48	464.37	467.00
Washington	354.82	695.82	708.01

Denver is the only city of this representative list in which food prices are as low as in San Francisco and Richmond. It will be noticed from the chart that food prices are lowest in the western cities of Denver, Seattle, Los Angeles and the Bay region. In estimating the cost of living, another important feature is the question of fuel and clothing for the family. Although data is not available on average cost of fuel per family, common knowledge would justify the assertion that there are few regions in the United States where the year's fuel for an average family would cost less than a California harbor city such as Richmond. The necessary outlay for clothing here is also low, as there is an exceptional uniformity of climatic conditions. This uniformly temperate climate obviates the necessity for the expensive upkeep of several sets of wearing apparel suited

to the extremes of temperature such as are found in the majority of the cities of the United States. All these factors combine in making Richmond attractive to industrial enterprises and industrial workers.

Other features that have contributed and will give future impetus to the growth of the city are good housing conditions, reasonable rents, opportunity for small, but profitable investments, and excellent sanitary and health conditions. Although Richmond is typically an industrial city, the death rate for the city is only 5.3 per 1,000.

Considering the various factors of harbor facilities, railroad accommodations, suitable factory sites, desirable residence sections, fortunate location as a natural traffic and commerce center, low costs of living, and excellent health conditions combined with the pleasing climate, the future growth and prosperity of the city seems assured.

B. Educational Facilities of Richmond

1. The Public School System

Due to the rapid growth of the city, the school system has experienced an unusual period of expansion. Within the short period of its twenty years of existence, the

Richmond system has developed from three small elementary schools with a few pupils to a system having enrollment of approximately 3,500. The system now includes nine elementary schools and a union high school. The enrollment in the elementary grades is approximately 3,000, while the high school enrollment is 550. Beginning with the school year 1919-20 an evening high school has been maintained with an enrollment of 170 students.

Chart No. XXVI gives in detail the names of the various public schools of the city.

Chart No. XXVI.

Public Schools of Richmond, California

Elementary	Secondary	
	Day	Evening
Lincoln	Union High School	Richmond Evening High School
Washington		
Grant		
Peres		
Fairmount		
San Pablo		
Stege		
Pullman		
Winehaven		

Proximity to the University of California has apparently had a considerable influence upon the nature of educational interest in Richmond in the past. As a whole the courses of study of the schools of the city point strongly toward preparation for entrance to the high school and the

University. It is said by those in personal contact with the student body that the demand in the past has been almost exclusively for courses of a classical or purely academic nature. While it is true that only a small percentage of those entering the elementary grades finish the entire course and graduate from high school, it is said that an unusual percentage of those who graduate from the high school enter the University, Richmond being second only to Berkeley High School in this respect among California high schools.

At the present time there are 120 teachers in the city school system, of which 22 are engaged in high school work.

During the present school year the first evening high school in Richmond has been organized. During the first term its enrollment reached 170, a large percentage of the students being enrolled in the Americanization and citizenship classes. In addition to the regular evening sessions, which are two hours in length, 7 P.M. to 9 P.M. Tuesdays Wednesdays and Thursdays, a sewing class is held from 3:50 P.M. to 5 P.M. for the benefit of those for whom those hours are convenient.

The program of subjects of the evening school is reproduced in Chart No. XXVII.

Chart No. XXVII.

Program of Subjects, Richmond Evening High School

Subject	Period	Tues.	Wed.	Thurs.
Americanization, Beginning	2&3	x	x	x
Americanization, Advanced	1	x	x	x
Advanced English Section1	2&3	x	x	x
Beginning English, Sec. 2	1	x	x	x
Beginning English	all	x	x	x
Primary English	all	x	x	x
Intermediate English	all	x	x	x
Grammar School Subjects	all	x	x	x
Typewriting	all	x	x	x
Bookkeeping	2&3	x	x	x
Stenography(Recitation)	1	x	x	x
Stenography(Supervised study)	2	x	x	x
BusinessEnglish	3	x	x	x
Commercial Arithmetic	3	x		x
Mechanical Drawing	all	x	x	x
Mathematics(Algebra, Geometry)	1	x	x	x
Sewing	3:50 P.M.	x	x	x
Sewing	all	x	x	x

2. Private Educational Facilities

In addition to the public school system, there are several private educational facilities that minister to a greater or less extent to the educational needs of the community. There are no parochial schools in the city, a fact that should be a favorable factor in the future development of the public school system. The principal private school in the city is the business college which has a considerable enrollment; and meets the needs of a certain class of the young people who desire that type of training. The

Santa Fe Railway Shop management conduct a Corporation School in connection with their terminal shops. This work is limited at present to Mechanical Drawing to supplement the workers' shop experiences; and provide a means of self-improvement in their various mechanical lines of work.

Other educational agencies that are available to the citizens of Richmond are: the extension courses of the University of California, the Mills College Lecture course, and the usual private correspondence schools. Another opportunity for intellectual self-improvement is to be found in the public library of the city.

C. The Future Educational Needs of Richmond

1. Based upon personal interviews with carefully selected representative citizens of various occupations.

As one method of ascertaining the educational needs of the city, a list of representative citizens engaged in the major occupations of the community was carefully compiled. This list included names recommended by educators, public officials, and labor leaders. The twenty one individuals who were personally interviewed by the author represent sixteen different occupations. These individuals include five educators, two labor leaders, a candy maker, a pattern maker, a shop foreman, a public service corporation

manager, a Roman Catholic priest, an editor, a fireman, a watchman, a banker, a brick layer, a Protestant minister's wife, a department store manager, a large factory manager and a social service worker.

During the twenty nine interviews with these twenty one individuals, the following list of questions furnished a basis of the information sought. Adherence to this list of questions in the actual interview varied with individual circumstances. No printed list was used in the interview, of course, and no notes taken until the interviewer had left the vicinity.

Questions Asked in a Typical Interview

(Introduction. Explanation of reason for seeking interview, etc.)

1. Q. With no special reference to your own school system, but thinking of past school instruction with which you have come in contact, do you think that the schools have been meeting the real practical needs of the young people?

2. Q. If not, wherein do you think that the school has fallen short of the best practical instruction?

3. Q. As you look back upon your own work in school, do you consider that any of the subjects studied were unnecessary as preparation for your life work?

4. Q. If you were taking your school work over, and could elect your own course, what subjects would you eliminate?

5. Q. What work would you like to add?

6. Q. Do you think that, if non-essentials were eliminated and the work given in a practical way, satisfactory preparation for this line of work could be given in high schools?

7. Q. Are college graduates employed in this work?

8. Q. (If so) Is their work superior to those not so trained?

9. Q. (If superior) Do you attribute this to the additional training or to natural ability?

10. Q. What advantages, if any, would college training give in this work?

11. Q. What advatages has the high school product over the college training?

12. Q. Will there be any in this establishment who will come under the provisions of the new Part-time School Attendance Law next year?

13. Q. In your opinion, what would be the most practical work to give them when they come back to school under these conditions?

14. Q. In your opinion, what would be the most practical courses to offer in the evening school for the young people who are learning this trade (or business) ?

15. Q. What courses could be offered in the evening schools that experienced workers in this line of work would like; or could be taken by them with profit?

A Typical Interview

The following is typical of the large majority of the various interviews, after the introduction, explanation of reason for seeking the interview, etc.

Q. "With no special reference to your own school system, but thinking of past instruction with which you have come in contact, do you think that the schools have been meeting the real, practical needs of the people?"

A. "Well, if you mean all of the people, I don't believe they have."

Q. "Wherein do you feel that the schools have failed?"

A. "Why, I have not thought enough about school matters recently to feel qualified to state exactly. I don't mean that they have entirely failed; but I know there was something wrong with what I got from them."

Q. "If it were possible for you to take your school work over, what subjects would you eliminate, if you had your choice?"

A. "You see I did not even finish high school. I didn't seem to fit in; and I quit in the 11th grade, took a business course and went into business. I soon found out that there were many things that I needed to know; and I have studied 'on the side'. I am taking a correspondence course right now in trigonometry. I have taken the essentials of a practical course in engineering 'on the side' as I have worked my way up. I didn't get any excess knowledge in high school, but I did waste considerable time on the Latin that I took. I have never used any of it, and I suppose that quadratic equations 'raising a to the nth power' and other parts of advanced algebra has been of no use to me."

Q. "If you were going to school again, what work would you like to add?"

A. "For my work I need a thorough commercial training. The principal need, as I see it, is to teach the essential subjects more thoroughly. If you have mastered the fundamentals as far as you have advanced, you can supply the missing knowledge by further study, by individual study, as I have, if you cannot go to college."

Q. "What advantages, if any, would college training give in this work?"

A. "It is an advantage, if the right kind."

Q. "Wherein do you think the advantage lies?"

A. "In the matter of prestige, if for no other reason. I would feel more confidence, if I were a college graduate."

Q. "Do you not think that your practical experience plus your individual study was as good as university training?"

A. "I wouldn't think of trading my training for any university training; but if I could have had my experience plus the university training to build on, it would be an advantage. Naturally that plan would have taken more time, and I could not afford it, because of financial considerations. You see, that is the problem with the majority of young people. The majority cannot afford to spend the time for an education that requires twenty years to secure after the age of five or six; and many do not have the necessary money to buy the opportunity for such an education."

Q. "That is exactly the problem that educators are trying to solve today. We are studying certain phases of that problem here by interviewing practical men who are actually in the industrial field, as you are, trying to find wherein we are failing to give the best possible practical education to the largest number of people. In your opinion, what would be the most practical work to offer in the evening school for young people who are now working for this corporation, or who are preparing for employment here?"

A. "The office force would, naturally, need a thorough commercial training."

Q. "Do you think that high schools are capable of giving satisfactory commercial education? Do you use any high school trained people here?"

A. "We use quite a number from high school. I see no reason why the training in high schools could not be made just as practical as in the business colleges. Some of the products of the business college are no better; but as a general rule, they get a more practical course of fundamental training. Some of our high school trained office help is very satisfactory."

Q. "What could be given for the benefit of other employees?"

A. "Our men on the outside work need mathematics, certain phases of physics, mechanical drawing, plumbing, and many need work in reading, writing and especially arithmetic."

Q. "Will there be any employees here who will come under the new Part-Time Law which goes into effect next year?"

A. "No, we have no work here suited to youths of that age."

While it is impossible to reproduce exactly the interviews with the various individuals for obvious reasons, yet the above is based on a real interview; and gives some idea of the usual reaction. Different individuals would naturally have personal experiences. Different individuals would have different ideas as to detail of recommendation. Certain questions applied directly in some cases and were not asked in other situations. A few individuals strongly recommended university training, and a classical education as an ideal that all should attempt to realize, but those few individuals were exceptions.

To the first question, which was asked of all interviewed, almost all answered in the negative.

The answers to the second question varied, but the majority felt that the school work had not been sufficiently related to the actual, immediate needs in the world outside.

The most common subject, mentioned in answers, to the third question, was Latin, followed by certain portions of algebra, civics as usually taught, the undue stress laid upon

political history of ages and generations ago to the exclusion of industrial history and current political history in many instances, and excessive attention to English classics, etc., in high school to the exclusion of thorough training in business English, Business Correspondence and accurate spelling.

The answers to the other questions covered a wide range but the consensus of opinion was that the need for practical courses was evident. In order that needed instruction may be given, any waste motion in our present courses should be eliminated.

2. Based on Richmond's Occupational and Civic Interests.

A summary of the occupational and civic interests of the city of Richmond, as outlined more fully in Part VI-A, shows that the opportunities for growth of the city are dependent upon its unusual industrial and commercial advantages. An unusually large proportion of the citizens of Richmond are engaged in industrial occupations. At the present time there are several thousand people, employed in Richmond in various industrial and commercial occupations, who reside in neighboring cities. This fact indicates clearly an immediate and rapid growth in population. These employees will eventually make homes in Richmond in order to

be near their place of employment. Thus the present indications point to an increase of Richmond residents whose occupational interests are chiefly industrial and commercial.

Richmond, with many large factories already in operation and excellent harbor facilities combined with good railways, is certainly destined to successful development as an industrial and commercial center. While the needs of those who desire university preparatory work should be met, statistics show that in the average community this group does not equal 10% of the youths of the community. The educational needs of the other 90% should certainly be given special attention. Evidently, in this community, this education should be of a nature that will best correlate with the dominant occupational and civic interests of the community, education in citizenship and health, and training for the industrial, trade, and transportation fields of the community.

3. Based upon State Occupational Opportunites.

The Federal Census of 1910 enumerates 422 major occupations. Of this number 227 were in the industrial field, 27 in agriculture, forestry and fishing, 31 in the professions, 97 the various departments of trade and transportation, 29

in domestic and personal service, 17 in public service, amd 14 occupations in the mining field. Of the 932,752 males engaged in occupations in California, 263,480 are in industry, 217,748 in agriculture, forestry, and fishing, 41,138 in professional service, 177,095 in trade, 100,052 in transportation, 78,062 in domestic and personal service, 23,923 in public service, and 31,254 in mining. Of the 174,916 females having definite occupations, 30,096 are in industry, 7,323 in agriculture, forestry and fishing, 28,315 in professional work, 42,254 in trade, 4,241 in transportation, 62,090 in domestic and personal service, 553 in public service and 44 in mining.

It is immediately apparent from a study of the state occupational field, that industry, trade, and transportation offer more opportunities than other lines of work. Of the 1,107,668 people engaged in occupations in California, 617,281 or more than 55% are engaged in industry and commerce. It would seem, then, that the occupational opportunities of Richmond and the occupational opportunities of the state of California are similar, and that largest occupational opportunities lie in the fields of manufacturing and mechanical industries, trade and transportation.

D. Opportunities for Vocational Instruction in The Evening High School

1. Available Equipment

In addition to the Science Laboratory and Domestic Science equipment, there is now available for possible vocational work in the Evening High School the following equipment:

Commercial

26 typewriters
1 mimeograph
1 Burroughs adding machine
1 bookkeeping room, accommodating 40 students

Industrial

2 engine lathes
1 drill press
1 power saw
2 forges
1 brass foundry
1 band saw
1 circular saw
1 planer
1 mortising machine
18 benches and sets of tools for wood work

In addition to the above equipment in the high school building, there are eighty benches and sets of tools for wood work in grade school buildings in other parts of the city.

2. Suggestive Courses Which Might be Offered

The following suggestive list of vocational courses, which might be offered with profit in an evening school serving sucha community as Richmond, is based upon a study of the evening school work of thirty three high schools of the state. Some of the suggested courses are already included in the Richmond Evening High School course of study. It might be found desirable to also offer work in the evening school in additional courses which are included in the suggestive list.

Suggestive Vocational Courses

Angle Measurements
Auto Repair
Auto Practice
Auto Electricity
Architectural Drafting
Acetylene Welding
Advertising
Accounting
Bookkeeping
Brazing
Basketry
Banking
Business Law
Business Arithmetic
Commercial Correspondence
Concrete Construction
Cooking
Commercial Art
Civil Service
Chemistry (General)
Chemistry (Industrial)
Cabinet Making
Dictation

Suggestive Vocational Courses (con.)

Dressmaking
Dietetics
Design (Millinery)
Drawing (Mechanical)
Electric Shop
Forge
Gardening
Home Nursing
Interior Decoration
Journalism
Linotype
Millinery
Mechanics (Strength of Materials)
Machine Shop
Machine Design
Navigation
Oil Analysis
Office Appliances
Poultry
Press Work
Printing
Pattern Making
Plumbing
Stenotypy
Shorthand
Shop Mathematics
Salesmanship
Ship Fitting
Sheet Metal Work
Steam & Gas Engineering
Typing
Telegraphy
Vulcanizing

While it is not recommended that all the foregoing courses in vocational work should be immediately offered in the Richmond Evening High School, yet the list includes courses, now in actual operation in California evening schools, that are adapted to the needs of the people of Richmond. It may not be administratively possible at the present time to

offer all the vocational courses suggested in addition to other needed courses such as Americanization and Naturalization work, but almost all the aforesaid courses could eventually be included in the evening school work with profit.

3. Conclusion

Vocational education is no fad. It has come to stay. It is definite training for specific occupations. It is sometimes defined as training for remunerative employment. While we should not neglect the training of people for the professions, yet the large majority are in need of training of a different character. The present strenuous economic condition impresses upon us the need for the higher efficiency in our educational system.

It is as illogical to hope to attain best results by providing only classical courses in our schools, as it would be to train exclusively for industry. The educational need of the future is a correct adjustment of training to the needs of the individual. Since many people who are now employed are deficient in training for their work, it seems evident that the evening schools of California have an opportunity to render a real service in providing suitable vocational instruction. That this instruction must be varied according to the current needs is apparent.

There will be demands for two types of vocational instruction. Those who are engaged in "blind alley jobs" with no prospects of promotion will desire occupational preparatory courses that will train them to enter a different line of work. Those who are in subordinate positions in a trade or business in which there is a promising future for the individual who qualifies will desire occupational continuation work to fit them for promotion.

The evening high schools have opportunities for real service. The work that the evening schools are doing in citizenship and health is eminently commendable. The courses that make for cultural improvement are much appreciated in some communities. Many schools are becoming important factors in the social life of their communities. These types of education are commendable as training for advantageous use of leisure time, but it is evident that the training that is of primary importance to the average individual is training that first fits them to earn a share of this leisure. We are justified in according to vocational courses the place of first in importance among the various types of courses offered in California evening high schools. This placement is justified by the definite nature of the work. It is justified by the marked demand for courses of a definite vocational nature. It is justified because this

demand comes from people who are most deserving of training at state expense. Our policy of absolute democracy in our public school system urges us to use wisely these opportunities for vocational education in the evening schools of California.

....

BIBLIOGRAPHY

Report of Commissioner of Vocational Education for California for the School Year 1917-18.

"Public Education in the United States" - Cubberly

Third Biennial Report of the California State Board of Education.

"Education for the Wage Earners" - Thomas Davidson

"Introduction to the Scientific Study of Education" - Judd

Richmond Harbor Engineering Survey

Eighteenth Biennial Report of Bureau of Labor Statistics for State of California, 1918.

Vol. IV and Vol. V, Federal Census, 1910.

Course of Study, Evening High School, Alhambra City, California

Course of Study, Alameda Evening High School, Alameda, California

Course of Study, Berkeley Evening High School, Berkeley,Californi

Course of Study, Burbank Evening High School, Berkeley, California

Course of Study, Chaffey Evening High School, Ontario, California

Course of Study, Fresno Evening High School, Fresno, California

Course of Study, Evening High School, Gilroy, California

Course of Study, Evening High School, Imperial, California

Course of Study, Evening High School, Long Beach, California

Course of Study, Central Evening High School, Los Angeles, California

Course of Study, Manual Arts Evening High School, Los Angeles, California

Course of Study, Maple Avenue Evening High School, Los Angeles, California

Course of Study, Polytechnic Evening High School, Los Angeles, California

Course of Study, San Pedro Evening High School, Los Angeles, California

Course of Study, Fremont Evening High School, Oakland, California

Course of Study, Oakland Evening High School, Oakland, California

Course of Study, Technical Evening High School, Oakland, California

Course of Study, Vocational Evening High School, Oakland, California

Course of Study, Evening High School, Pasadena, California

Course of Study, Evening High School, Pomona, California

Course of Study, Evening High School, Redondo, California

Course of Study, Evening High School, Richmond, California

Course of Study, Evening High School, Sacramento, California

Course of Study, Evening High School, San Bernardino,California

Course of Study, Evening High School, San Diego, California

Course of Study, Commerce Evening High School, San Francisco, California

Course of Study, Humboldt Evening High School, San Francisco, California

Course of Study, Evening High School, San Mateo, California

Course of Study, Evening High School, Santa Monica,California

Course of Study, Evening High School, Santa Barbara,California

Course of Study, Evening High School, Stockton, California

Course of Study, Evening High School, Venice, California

Course of Study, Evening High School, Vallejo, California

RETURN TO → **EDUCATION-PSYCHOLOGY LIBRARY**
2600 Tolman Hall 642-4209

LOAN PERIOD 1 **SEMESTER**	2	3
4 SEMESTER LOAN NO TELEPHONE RENEWALS	5	6

ALL BOOKS MAY BE RECALLED AFTER 7 DAYS
2-hour books must be renewed in person
Return to desk from which borrowed

DUE AS STAMPED BELOW

SEMESTER LOAN		
MAY 1 2 1984		
SUBJECT TO RECALL		
REC'D APR 2 0 '84 -4 PM		

FORM NO. DD10

UNIVERSITY OF CALIFORNIA, BERKELEY
BERKELEY, CA 94720

UNIVERSITY OF CALIFORNIA
DIVISION OF VOCATIONAL EDUCATION
BERKELEY, CALIFORNIA